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Instructors' Perceptions of Differentiated Instruction at Four Universities in the United States

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Walden University

College of Education

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Brandy Waldron

has been found to be complete and satisfactory in all respects,
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Walden University
2020

Abstract

Instructors' Perceptions of Differentiated Instruction at Four

Universities in the United States

by

Brandy Waldron

MBA, Southwest Minnesota State University, 2010

BAS, Southwest Minnesota State University, 2007

Walden University

January 2020

Abstract

According to a 2015-2016 fall term end-of-course survey at a university in the southern United States, differentiated instruction (DI) was minimal and student participants reported that they may have performed better on coursework if given a variety of learning options. The purpose of this study was to determine how instructors at 4 U.S. universities perceive use of DI and their ideas about the necessary tools and strategies to practice it. Research needed to be conducted so instructors could successfully meet the diverse needs of students by having the necessary tools to practice differentiation. Tomlinson's theory that focuses on the need for DI methods to be present to connect with the needs of learners, and Gardner's theory based on how people learn in different ways, formed the conceptual framework that guided this study. The research questions focused on instructor experiences, perceptions, and attitudes regarding use of DI and being equipped with necessary tools and strategies to practice differentiation. An exploratory case study was used to capture the insights of 11 instructors purposefully selected from 4 campuses and various subject areas through a 13-item questionnaire. Five themes were identified through open-ended coding of emerging ideas, and the findings were checked for trustworthiness through transcript review. The themes were (a) implementation of DI varied but was limited, (b) professional development opportunities using DI were desired, (c) positive and negative attitudes toward DI were reported, (d) perceptions of DI varied, and (e) diversity of learners was present in all classrooms. This study has implications for positive social change by suggesting ways that faculty can implement differentiation of instruction that may enable students to be more successful in higher education.

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

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January 2020

Dedication

I dedicate this study to my parents, Bill and Connie Hardwick, first and foremost. They have taught me to never give up even when the going gets tough. In addition, for their support and always believing in me. Last, for my dad's sense of humor when needed the most, and for my mother's warm words of encouragement during our talks. I also dedicate this to both of my sisters, Billie, and Katie. They have truly been lifelong best friends through thick and thin. I also dedicate this body of work to my Grandmother, Helen, who was always a loving woman that led by example and believed that family and loyalty come first. To my grandfather, George Hardwick for his infectious grin and sense of humor. To my daughters, Kennedy and Ireland, don't ever give up! Achievements are earned through hard work, dedication, and persistence.

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Chapter 1: Introduction to the Study

In this study, I focused on differentiated instruction (DI) at the university level. My goal was to determine instructors' perceptions, experiences, and attitudes regarding DI at a U.S. university, and whether they thought they had the necessary tools and strategies to practice DI. Research needed to be conducted so that instructors could successfully meet the diverse needs of students by having the necessary tools to practice differentiation. A positive contribution to social change was implicated because college instructors gained insight into differentiation at the college level, which included instructors sharing perceptions, experiences, and attitudes relative to DI with the researcher.

Chapter 1 of this study includes the background of DI relative to the theory of Tomlinson et al. (2003). The theory of Tomlinson et al. is followed by the problem, in which I focus on the lack of DI. The problem is followed by an explanation of why this study needed to be conducted. Next, I introduce research questions that guided the study, followed by a discussion of the conceptual framework of the study, in which I provide a detailed look at conceptual distinctions and ideas related to differentiation of instruction. I explore the nature of the study by outlining the study design, and present definitions relative to the study followed by sharing assumptions based on the notion that participants were adult volunteers who shared their perceptions, experiences, and attitudes in answers to the research questions. Furthermore, I discuss the scope of the study, and address the boundaries or delimitations. Furthermore, I present the

significance of the study, including who may benefit from the findings as well as how the literature may be extended to explore further studies.

Background

Tomlinson et al. (2003) discussed differentiation with respect to its effectiveness. Differentiation was developed to meet a wide range of students' needs. Moreover, differentiation is not effective unless teachers are given the proper tools to practice it (Aldajah, Haik, & Moustafa, 2014; Tomlinson, 2015; Wu, 2013). In a nationwide survey, which included 900 k-12 teachers, more than 80% said DI was *very difficult* or *somewhat difficult* to implement because of a lack of professional development (Ching-Fu Lan, 2016). According to Tomlinson (2015), differentiation can take place through (a) content, (b) process, (c) product, and (d) the learning environment. Furthermore, Gardner's (1983) theory of multiple intelligences helped guide this study. Gardner (2011) suggested that humans learn in different ways relative to their unique intelligence, a theory developed primarily through studies of the human brain.

This study needed to be conducted to determine instructors' perceptions, experiences, and attitudes regarding DI, and to determine whether they believed that they had the necessary tools and strategies to practice DI. Exploration of teachers' perceptions, experiences, and attitudes were instrumental in determining whether instructors believed they were properly equipped to bring best practices of differentiation into the classroom. A review of the literature suggests there is a gap in practice regarding teachers' viewpoints on the importance of possessing proper tools to successfully implement and practice differentiation (Parsons et al., 2013; Tomlinson, 2015; Wu, 2013). For example,

Ellis (2015) suggested that there is a contrast in the university student learning experience because of student characteristics and perceptions that are directly related to teaching approaches. It is estimated that the world population of college students will increase from 196,000,000 in 2012 to 263,000,000 by 2025 while the student body will continue to become increasingly diverse (Kara, 2015). Through this study, I can also help address concerns of diversity in students.

Tomlinson (2015) suggested that variations in the learning experiences of first-year university students are associated with college professors' lack of differentiation and that implementing a variety of teaching methods may cause greater achievement in blended courses. Furthermore, Postareff,-Mattsson, Lindblom-Ylänne, and Hailikari (2017) conducted an in-depth study that examined the relationship between emotions, learning approaches, and study habits of students during the transition to universities. The authors suggested that the relationship between student emotions and student learning approaches have a connection with teaching methods (Postareff et al., 2017). In addition, students may experience positive emotions when a variety of teaching methods are practiced; therefore, the needs of students are met since students learn in different ways. A review of the aforementioned literature indicates that teaching approaches may not connect with learning approaches (Ellis, 2015; Parsons et al., 2013; Tomlinson, 2015; Wu, 2013). The gap in practice in this study addresses lack of understanding about how instructors perceive that DI can be best applied in the university setting.

Problem Statement

The problem that inspired this study was lack of DI at the university level.

According to a 2015-2016 fall term end of course survey, 53% of students who participated reported that they may have performed better on coursework if given a variety of learning options. In addition, students believed that group work and visual learning aids may have contributed to a positive learning experience. For example, Student A stated in the survey that the course consisted of all lectures and tests. Student B stated that class discussions may have resulted in increased interest in subject matter. Survey feedback included a variety of six courses consisting of mathematics, English writing, career management, career path planning, marketing, and business law. Furthermore, personal conversations among colleagues included two opposing viewpoints. For example, a business law college instructor at a faculty meeting said, that “Professors should use traditional teaching methods such as lectures, and note taking” (personal communication, June 7, 2016). In contrast, an interpersonal communications college teacher at a faculty meeting commented, “I would be interested in learning more about DI methods to better serve my students” (personal communication, June 7, 2016). Thus, it was important to determine how instructors thought about DI, and how they were equipped with the tools and strategies necessary to practice differentiation in the classroom, so the needs of all students could be met.

There is a lack of DI methods in college classrooms (Bell, 2016). Research on instruction at the college level included one method that can use differentiation that has been termed the *flipped classroom* in kindergarten through Grade 12 settings (Wallace, 2014). The basic premise of a flipped classroom is that classwork and homework are flipped. Students watch videotaped lectures for homework and do learning activities in

the classroom with the help of the teacher and peers. Flipped classroom models that demonstrate differentiated practices may prove effective in college settings just as in the K-12 arena (Johnson, Taasoobshirazi, Clark, Howell, & Breen, 2016; Langrehr, Phillips, Melville, & Eum, 2015; National Student Clearing House Herndon 2012; Zerquera, Ziskin, & Torres, 2016).

There is an age gap in research regarding DI (Langrehr et al., 2015). Although the same methods may apply to the college population, much research is still needed. Recent research on instruction at the college level included flipped classroom strategies initially adopted by K-12 institutions, active learning, and blended classrooms (Entezari & Javdan, 2016; Hernández-Nanclares & Pérez-Rodríguez, 2016; Subramaniam & Muniandy, 2016; Zainuddin & Halili, 2016). There has been insufficient research, however, on differentiation itself as described by Tomlinson (2015). For example, there are more than 100 peer-reviewed articles regarding DI methods in K-12 schools, and approximately one-third of that regarding differentiation at the college level.

According to the National Student Clearing House (2018), 38% of college students are nontraditional. Therefore, considering the importance of how colleges can aid in the successes of students and teachers based on the different age groups of college students is paramount. There are approximately 33 locations of the university in the United States and an online division for all programs if students opt to attend on-line. The mission of the university is to welcome students of diverse interests, cultures, and abilities. In addition, the university is dedicated to providing quality higher education while creating a caring and supportive learning environment. Bell (2016) suggested that

traditional college students between the ages of 18 and 22 years have now become the minority.

According to the National Student Clearing House Herndon (2012), there are approximately 17 million undergraduates. Of these, 38% are older than 25 years and are enrolled in higher educational institutions. Furthermore, college students older than 25 years are projected to increase by an additional 23% by the year 2019. More than 40% of university enrollment populations can be deemed as nontraditional (National Student Clearing House, 2018). There is a wide range of diversity among students relative to age, culture, and educational background. Different students have different needs. As a result, a look through the eyes of instructors at the focus university was important to determine instructors' perceptions, experiences, and attitudes regarding the use of DI at a U.S. university, and whether they thought they had the necessary tools and strategies to practice DI. A review of the literature has suggested that further studies may contribute to an increase in DI in the college classroom (Ellis, 2015; Parsons et al., 2013; Tomlinson, 2015; Wu, 2013). In this study, I addressed the gap in practice related to DI.

According to Lightweis (2014), instruction in colleges is mostly delivered through lectures. When differentiation is used, students achieve higher academic success (Lightweis, 2014). The literature promotes college instructors who focus on student-centered learning strategies to better serve the needs of students (Geelan et al., 2015). Furthermore, Tomlinson (2015) highlighted the importance of tailoring instruction to individual needs based on the idea that each student learns in different ways. In addition, Tomlinson suggested that teachers must consider the differences among individual

students in terms of cultural background and learning styles to better meet the needs of students.

Purpose of the Study

According to Bryman, (2006), most qualitative research transpired from the interpretive paradigm. The interpretive paradigm is based on the idea that reality is created through individual meanings and understandings derived from experiences and social development. Interpretivists share common beliefs about the nature of knowledge and reality. For example, a central common belief is that people cannot separate themselves from what they know. Therefore, the paradigm suggests that there is a direct association between reality and how people view others, their selves, and the world. This qualitative study speaks to this paradigm in that individual instructors shared their perceptions, experiences, and attitudes regarding DI practices as they know it. Each instructors' experience contributed to the study and assisted in determining how they perceived DI and how they were equipped to implement such practices in their respective classrooms.

My purpose in this study was to determine how instructors at a U.S. university (this is a pseudonym to protect the identity of the university) perceive use of DI, their attitudes regarding DI, and their ideas about the necessary tools and strategies to practice DI within their respective classrooms. Examples of DI tools and strategies may include inquiry-based learning, project-based learning, self-directed learning, choice boards, reciprocal teaching, game-based learning, and flipped classroom strategies. My intent in this study was to explore perceptions, experiences, and attitudes of DI among instructors

because of reported lack of differentiation at a variety of campuses at a U.S. university (U.S. university fall term end of course surveys' 2015-2016). Needs among diverse populations of nontraditional college students may vary (Wu, 2013); therefore, there was a need for a deeper examination into the knowledge of instructors relative to DI methods in the classroom.

There was a combination of thoughts from instructors based on the questionnaire feedback. Three instructors said that they wanted to learn more about DI, whereas two other instructors believed strongly about using traditional teaching methods such as lectures and note-taking. There was a lack of follow-up with faculty. Therefore, more research was needed to determine attitudes, experiences, and perceptions of differentiation among instructors. Findings revealed that the administration may deem it necessary to educate instructors on a variety of DI methods to better serve students. When students have positive learning experiences, they are more likely to succeed through their academic journey (Lumpkin & Multon, 2013). Furthermore, studies have shown that DI practices enable overall student success in terms of higher grade point averages and positive learning experiences (Bradford, Mowder, & Bohte, 2016).

Wright (2014) suggested that diversities of knowledge be considered to maintain standards of excellence among higher education students. Moreover, Wright (2014) demonstrated the importance of comparing traditional teaching practices to differentiation to examine teaching and learning outcomes. Examining and comparing traditional teaching methods with differentiated teaching methods is relevant in that the purpose of this case study included a variety of instructors. In this study, I explored

perceptions, attitudes, and experiences regarding DI, how instructors perceived use of DI, and their ideas about the necessary tools and strategies to practice DI to determine whether they believed they had the necessary tools and strategies to practice DI.

Research Questions

The research questions in the following list guided this qualitative case study. Furthermore, the research questions provided the structure for analysis and data collection. In addition, the problem statement and my purpose in the study dictated the formation of the research questions. I used past and current (McLean, Attardi, Faden, & Goldszmidt, 2016; Tomlinson, 2015; Wright, 2014) theoretical research to provide insight into the following questions:

RQ1: How do instructors describe their experiences with practicing DI methods?

RQ2: How do instructors describe their perceptions of DI methods?

RQ3: How do instructors describe their attitudes on being equipped with the necessary tools and strategies to practice differentiation in the classroom?

Conceptual Framework

The conceptual framework for this study was based on the theory of Tomlinson et al. (2003) that focuses on the need for DI methods to be present in the classroom. According to Tomlinson (2015), there is an increased need for DI as the student population in all educational arenas has become progressively diverse. Students vary in socioeconomic status, motivation, cultural backgrounds, language, abilities, and disabilities (Tomlinson & Imbeau, 2010). As a result, the demand for DI methods is rising. The theoretical framework is evidentiary of academic achievement and has proven

effective in having a positive influence on students of all ages and academic levels (Tomlinson, 2015). Prior theories including multiple intelligence theories as well as student readiness theories (Armstrong, 2014) reflect relevance in that the purpose of this study was to explore whether instructors believed they had the necessary tools and strategies to practice differentiation. Tomlinson suggested several ways for students to learn content. For example, reading with a partner versus reading alone, listening to a book on tape, and participating in small group instruction, and working with other students on demonstrations are examples of how instructors can use DI.

The framework relates to the study approach because a case study design was used. Case studies are often used to provide a detailed examination of a group of people (Creswell, 2015). Therefore, because the experiences, attitudes, and perceptions regarding DI practices of college instructors is explored, the framework, which outlines Tomlinson and Gardner's theories were an appropriate fit for the study approach because they lend to the possibility that DI methods may serve the needs of all students versus traditional teaching methods such as lectures and note-taking. An open-ended questionnaire is used to collect data. Data analysis procedures evaluated themes among participants in relation to instructor's perceptions, attitudes, and experiences regarding DI.

Gardner (2011) established a theory that suggested humans learn in different ways according to learners' different proclivities. According to this theory, it would be logical to assume that DI should be present in college classrooms so that students have options to learn in accordance with the variance of learning proclivities Gardner, H. (1983). Case

studies have been conducted in conjunction with Gardner's (2011) theory of multiple intelligences to determine how students learn (Armstrong, 2014; Thomas & Hilton, 2016). I present a thorough explanation of Gardner's theory in Chapter 2.

Nature of the Study

A case study research design is used to conduct this qualitative study. The rationale for using a qualitative approach was to explore the experiences, perceptions, and attitudes of instructors relative to DI practices within their classrooms. According to Guetterman, Fetters, and Creswell (2015), qualitative methods are an approach to social science research that places emphasis on understanding the participant's point of view (Merriam, 2009).

In this study, I explored participants' experiences, perceptions, and attitudes regarding DI practices. This study included 11 purposefully selected instructors from a U.S. university. The instructors were purposefully selected from four different campuses for the collection of rich and varied data and to assure enough participants. There were no prior personal or professional relationships with the participants, which decreased potential bias.

Open-ended questionnaires through a host cite (SurveyMonkey) was the primary method used for data collection. According to Creswell (2016), case study research approaches are conducive to gaining an understanding of the subject's points of view. The 11 participants were questioned through a questionnaire about their experiences, perceptions, and attitudes concerning DI. Data is analyzed by acknowledging possible themes of the open-ended questionnaire of the 11 participants using the open coding

method.

Last, transcript reviews through the host site are used to ensure the accuracy of the participant's questionnaire answers to establish consistency and credibility of information. For example, at the end of each questionnaire, participants are asked to go back and review their answers to ensure accuracy, then place an electronic X next to each answer. According to Creswell (2015), transcript checks are used in qualitative research by asking participants to check the accuracy of the information they provided to the researcher.

Definition of Terms

Consistency: refers to the reported data being the same as the data collected. This term refers to reporting the collected data accurately, so it is consistent in the researcher's report. In addition, that the researcher remains objective and eliminates their interpretation of what the findings may indicate or how they may or may not relate to the research theory (Bogdan & Biklen, 2007).

Credibility: refers to results that are accurate and consistent through time and that the researcher gives an accurate representation of all participants in the study. Furthermore, if the results can be duplicated under a similar methodology, then the instrument the researcher used is deemed to be reliable (Bogdan & Biklen, 2007).

Differentiated instruction: A framework or philosophy that teachers use to offer students a variety of learning options to meet the needs of students relative to their learning styles is referred to as DI (Pham, 2012).

Transcript accuracy checking: asking participants to validate their answers related

to the interview with the researcher to improve the validity, credibility, the accuracy and transferability of a study (Bogdan & Biklen, 2007). The participants are asked to place their initials next to each one of their answers. This provided me with assurance that each instructor double checked their answers for accuracy.

Assumptions

The first assumption that I made was that the participants would have taught a variety of courses collectively as a group based on their age and years of teaching experience in higher education. I assumed that this could contribute to a possible variance in experiences, attitudes, and perceptions making for a well-rounded, reliable study. My second assumption was that the selected participants would base their responses on workplace experiences and avoid the use of outside perceptions. My final assumption was that participants would answer open-ended questions with honesty.

Scope and Delimitations

The scope of this study was to provide research on DI at the college level. My objective in this study was to explore instructor perceptions, experiences, and attitudes regarding DI within their respective classrooms. The design for this qualitative study allows for the collection of material from instructors across four different campuses located in Minnesota. DI was chosen because of its attempt to improve the learning of the growing diversity of the student body relative to age, gender, socioeconomic status, and background (Gardner, 2011; Tomlinson, 2015).

The delimitations of this study consisted of the desired sample size of 10 adult participants in addition to the age, gender, and population of students that instructors may

have had experience teaching. The literature suggested that the college population of students is predicted to become increasingly diverse. Therefore, if there was not enough variance in diversity, this could act as a roadblock in the study. Furthermore, the sample size increased from 10 participants to 11 participants. The initial delimitation referred to the possibility that there would not be at least 10 participants and could have negatively influenced the study as a result because at least 10 were desired to ensure a well-rounded study. Delimitations also included the geographical location of the four campuses that participants were currently teaching at because it only included Minnesota campuses. Administration, students, and other university staff did not participate in this case study. This study is solely based on the instructors. The potential for transferability is possible in that the U.S. university has campuses in 13 states and serves a diverse group of students. Campus instructors who did not participate in the questionnaire outside of the four chosen campuses may choose to examine findings of the work if it may provide positive social change at their respective campuses. Conceptual frameworks that were not investigated relative to the study include the conceptual conflict and accommodation framework. This framework focuses on creating conceptual conflict while encouraging cognitive accommodation as an alternative approach to teaching and learning (Hofmann, 2014; Nussbaum & Novick, 1982). Tomlinson et al.'s (2003) theory that emphasizes the need for DI to be present in the classroom guided the framework for this qualitative case study.

Limitations

Reasonable measures to address limitations included maintaining the

confidentiality of participants, considering that data may not fit into standard categories based on participants questionnaire answers, and understanding that further research may need to be conducted. Further research may have to be conducted if themes or patterns do not emerge because of lack of participants. In addition, having a large enough sample size for a well-rounded study is a reasonable measure to address limitations. If fewer than eight instructors chose not to participate, there may not have been enough information to contribute to positive social change at a variety of the U.S. university campuses. I thought that if there were a large enough sample size, the administration may consider the implementation of additional tools for instructors to practice differentiation. Qualitative research is contingent on the skills of each individual researcher (Creswell, 2016, Patton, 2015; Dooley, 2002). Furthermore, building rapport with participants is crucial to collecting authentic answers for data collection. Rapport is built by using a professional and friendly tone with participants when communicating electronically through the host site. In addition, I did not demonstrate opinions or bias regarding the topic of DI. Lack of rapport could be a limitation because participants may not give authentic answers. Furthermore, qualitative research is many times left to perception whereas quantitative research is straight forward (Armstrong, 2014). Participants responses can be influenced by the researcher being present during data collection; however, because all communication was conducted through a host site, the participants may have been more comfortable giving authentic answers (Creswell, 2016).

Limitations of this study included the limited geographical location of campuses chosen for selected participants. Therefore, participants may be limited to experiences

with students in Minnesota exclusively. The findings may prove difficult to provide a contextualized assimilation with other campuses outside of Minnesota as a result.

Therefore, results may only be conducive to Minnesota campuses. My objective was for the open-ended questionnaire to assist in eliminating bias and produce honest answers.

Significance

Through this study, I contributed to filling the gap in literature, which was lack of research at the college level regarding DI, by collecting evidence from postsecondary educators regarding differentiation in addition to determining whether instructors wanted to know more about tools and strategies that could assist them in the practice of differentiation (Parsons et al., 2013). In this study, I have provided a general contribution to higher education by exploring attitudes, perceptions, and experiences of instructors to provide feedback on differentiation. An influx of differentiation strategies in college classrooms has been shown to be effective (Wu, 2013). Strategies that have proven effective include the identification of student readiness in addition to enhancing collaboration among both students and educators, which will also serve as a contribution (Kane, McCaffrey, Miller, & Staiger, 2013). When teachers practice differentiation, it can enable students to learn required coursework to the best of their ability, hence, making for a more positive learning experience (Chien, 2014).

According to Tomlinson (2015), the sole practice of lectures does not positively contribute to the expansion of content knowledge by every student. Should the information from this study provide administrators, stakeholders, and campus directors with pertinent information regarding the need for differentiation to be present in the

classroom in Minnesota, it could possibly have a rippling effect that may influence social change at several other U.S. university campuses nationwide. Implementing differentiation, therefore, could positively effect social change at this university by providing a variety of teaching methods to better suit the needs of each student (Freiberg Hoffmann, Stover, Uriel, & Fernández Liporace, 2015)

Summary

The problem that is explored in this study was lack of DI at a U.S. university in accordance to a 2015-2016 end of term student survey. My purpose in this qualitative study was to determine how instructors at a U.S. university perceive use of DI, their attitudes regarding DI, and their ideas about the necessary tools and strategies to practice DI. This case study contributes to needed research by confronting DI at the college level versus kindergarten through Grade 12 where there has been more research conducted regarding differentiation. Furthermore, this study is aimed to inform instructors and administrators of instructors' perceptions experiences, and attitudes of DI as well as the self-evaluation of their own knowledge of tools and strategies to practice differentiation in the classroom. Finally, this study will discuss whether instructors at the U.S. university want more professional development on DI.

Chapter 1 was composed of an introduction to this study regarding DI. Included were a variety of components from an array of researchers highlighting the phenomenon of DI. The theoretical foundation of this study is derivative of Tomlinson's (2015) theory of responding to the needs of all learners. Chapter 2 will include a review of the literature comprised of pertinent information relative to DI. I will discuss a variety of ideologies

and models related to DI methods. In Chapter 3, I will describe the research design and methodology by including details regarding the administration of questionnaires to participants. Chapter 3 will also include details pertaining to the population of participants. In Chapter 4, I will detail analysis of the data, including the data collection information. In Chapter 5, I will provide an interpretation of the findings, the limitations of the study, the recommendations, and the implications. Last, Chapter 5 will conclude the study.

Chapter 2: Literature Review

In this chapter, I analyze empirical research that will show evidence that a variety of DI methods have proved effective. Furthermore, the literature review also includes related studies indicating that some DI methods have not proved effective. The problem that I researched was a lack of DI at a U.S. university. My purpose in this study was to determine how instructors at a U.S. university perceive use of DI, their attitudes regarding DI, their experiences with DI, and their ideas about the necessary tools and strategies to practice DI within their respective classrooms. A variety of teaching styles including teacher effectiveness, student achievement, flipped classroom teaching methods, diversity, and learning styles are presented throughout the literature review as they relate to possible DI methods in the college classroom.

Current trends in higher education have reflected a significant increase in student engagement as the result of the emergence of active learning. In addition, team-based learning has shown increased academic scores. Flipped-classroom methods that were incorporated have proved effective in the kindergarten through Grade 12 arena as well as in higher education settings. Whereas there are many theories relative to a variety of teaching methods, differentiation has many approaches, in lieu of differences in both teaching styles and theory (Allen, Whitley, Lawton, & De Aquino, 2016).

Many topics are relative to DI. As I mentioned earlier, the following topics will be the primary focus of differentiation in the literature review: teacher effectiveness, student achievement, flipped classroom teaching methods, diversity, and learning styles. In addition, evidence of the effectiveness of DI are reported as well as opposing views

through a variety of case studies. In the following discussions of peer-reviewed articles, I provide topics related to DI that I will use to represent various components of this case study.

Literature Search Strategy

I did a comprehensive analysis of relevant research works to inform the study. The collected material is derived from internet searches, including Google, Google Scholar, Bing, and Yahoo. In addition, the iterative search process to identify germane scholarship included a variety of databases accessed through the Walden library including Sage, academic Search Complete, the National Center for Educational Statistics, and Pro Quest Central. Furthermore, I searched archived folders, including Education Source, and Sage, to collect literature. Keyword searches to gather information included *adult education*, *alternatives to traditional instruction*, *differentiation*, *differentiated instruction*, *diversity in the classroom*, *English language learners' learning styles*, *flipped learning*, *higher education and teaching*, *innovative instruction*, *inverted classroom instruction*, and *traditional teaching methods*. The following sections are discussed throughout a review of the literature: teacher effectiveness and student achievement, diversity among students, various learning styles, and flipped classroom teaching strategies.

Conceptual Framework

The concept of differentiation was established and corroborated in both research and literature by Gardner (1983). Gardner (2011) suggested that humans learn in different ways relative to their unique intelligences; his conclusions were developed primarily

through studies of the human brain that described the potential theory of multiple intelligences in both children and adults, which included (a) “linguistic intelligence,” (b) “logical-mathematical intelligence,” (c) “spatial intelligence,” (d) “bodily-kinesthetic intelligence,” (e) “musical intelligence,” (f) “interpersonal intelligence,” (g) “intrapersonal intelligence,” and (h) “naturalist intelligence” (Gardner, 2011, p. 77-82). According to Gardner (2011), school leaders primarily focus on linguistic and logical-mathematical intelligence to measure student’s content knowledge. Gardner’s framework supports the use of differentiated-teaching methods to allow students of all ages and learning orientations the opportunity to learn to the best of their ability by encouraging them to learn in ways unique to their individual intelligences (Armstrong, 2014; Hwang, 2015). Educating college instructors in areas of intelligences may assist them in implementing differentiated teaching methods.

Whereas differentiation has a wide array of subtopics, meanings, and models, it mirrors the notion that students learn in different ways (Fountain, 2014). The application of DI methods should be an on-going process for teachers and students in colleges nationwide (Parsons et al., 2013). Educators must evolve with the needs of students to serve the needs of all learners (Tomlinson et al., 2003). Furthermore, teachers may be partial to specific models of differentiation based on individual teaching styles.

Differentiation involves preparation for various learners. For example, the flipped classroom method involves classroom content to be introduced at home, and then working on it in the classroom. Active learning is just the opposite and encourages peer teaching and group projects. Tomlinson et al. (2003) suggested that the modification of

academic content in addition to the process of developing different teaching methods are key factors for bringing DI methods into the classroom. Furthermore, developing lesson plans and subject matter at different levels of complexity could serve the specific needs of individual students. Tomlinson (2015) found that assessing individual learning styles and levels of readiness before formulating lesson plans benefited students so that each lesson plan aligned with each student's ability. However, the research also concluded that time management could cause concern for teachers if tasked with developing several dissimilar lesson plans.

This study benefits from the DI framework because it is informed by the works of a variety of scholars (Akin, 2016; Aldajah et al., 2014; Bradford et al., 2016; Broadbent & Poon, 2015; Chang, Liu, & Huang, 2017; Chao, Paiko, Zhang, & Zhao, 2017; Damrongpanit, 2014; Eaton, 2016; Freeman et al., 2014; Freiberg Hoffmann, Stover, Uriel, & Fernández Liporace, 2015; Suntonrapot & Auyporn, 2014). The previously listed scholars conducted copious amounts of research to study the implementation of DI methods for students of all ages at a variety of academic levels that I present in the following literature review. The framework demonstrates evidence of both student and teacher experiences and perceptions relative to a variety of benefits regarding DI. The following descriptions of peer-reviewed articles provide an understanding that will represent the various components of the case study.

Literature Review Related to Key Concepts and Variables

The following are key concepts and variables from empirical research that relate to the use of DI. The key concepts provide a rationale for the selection of topics inherent

to this qualitative study and what is intended to be accomplished based on the research questions. I reviewed several Publications to examine an array of opportunities and methods relevant to DI (McLean et al., 2016). The following concepts are used to organize the literature review: teacher effectiveness and student achievement, diversity, learning styles, the flipped classroom, service learning, student-centered learning, active learning, and teaching styles.

A review of the literature indicated that many studies have been done concerning DI. However, research at the college level is still needed to explore student and teacher perceptions, attitudes, and experiences with differentiation or lack of, and to determine whether the needs of learners are being met in addition to determining if teachers want more tools to implement these methods (Bobkina & Stefanova, 2016). The implementation of additional tools may lend new knowledge to instructors and assist them in the implementation of DI practices.

Researchers in the discipline have taken a variety of approaches in conducting multiple studies. Using large, diverse sample sizes has been a strength in several studies that have provided concrete evidence that differentiation is an effective teaching method in K-12 arenas as well as colleges (Bell, 2016; Beaudry, 2015; Bradford et al., 2016; Chien, 2014). Furthermore, there have been negative outcomes that were attributed to small sample sizes and participant bias (Li, 2016). For example, one study by Li (2016) interviewed five college instructors who had all taught for more than 14 years. Results indicated that participants believed that traditional methods were most effective. Instructors believed strongly that lectures, quizzes, and tests were the primary method to

assess learner knowledge. This study's weakness included both a small sample size and lack of diversity among participants in terms of age, years of experience, and personal bias (Geelan et al., 2015). This literature review includes a discussion of quantitative and qualitative studies, which provide insight into the topic of DI. The following subheadings are used to organize the literature review: teacher effectiveness and student achievement research studies, diversity studies, learning style studies, flipped classroom method studies, service-learning studies, student-centered learning and active learning methods, and teaching style studies.

Teacher Effectiveness and Student Achievement

This section will include a discussion of differentiated teaching methods focused on tiered lessons and collaborative learning for academic achievement. Increased academic success is among one of the many reasons for the implementation of DI methods (Hodges, 2015; Allen, Withey, Lawton, & De Aquino, 2016) in colleges today. A review of the literature demonstrated evidence that teacher effectiveness and student achievement have a direct relationship with DI (Mete & Bakir, 2016). Teacher lack of effectiveness related to poor student achievement gains in addition to low overall student outcomes in areas of mathematics, science, and English has been a cause for concern (Kane et al., 2013).

A study of video-based classroom observations by school staff members of elementary students, junior high students, and high school students in mathematical classes have shown that using DI in grades K-12 has had positive results that have revealed improved learning outcomes. (Kane et al., 2013). If DI methods have proven

effective in the kindergarten through Grade 12 arena, it may be possible that students who have experienced such methods may perform better as they move to higher education (Lumpkin & Multon, 2013). In addition, English college students were found to have a positive attitude towards tiered assignments, a tool of DI, and appreciated when teachers implemented differentiation in the classroom through a combination of choice models, lectures, and group projects (Chien, 2014).

A cross-examination study regarding learning styles, teaching strategies, and academic achievement revealed that differentiation in the college classroom may increase teacher effectiveness and student achievement. The primary reason for the study was low academic achievement scores. Interestingly, results indicated that traditional teaching methods were desired by teachers as opposed to differentiated methods (Gulatieri & Chapman, 2010).

DI may increase college student achievement because students learn in different ways through a variety of learning styles. The study explored high trust learning and blended learning in colleges to see what strategies may contribute to increased academic success. Educators who practiced a variety of teaching styles, cultivated the odds of academic success for students (Baecher & Connor, 2016; Holland & Piper, 2016). DI has led to higher academic achievement among higher education students versus traditional teaching practices. A study was conducted to examine 2 sets of teachers preferred learning styles in addition to the best strategy for each learning style (Tulbure, 2012). The purpose was to compare student academic achievement after comparing learning styles. An association between the use of DI methods and increased academic achievement of

higher education students were found. However, further research is needed to explore the effects of DI methods (Talbure, 2012).

One aspect of DI could be collaboration. A study of eight-hundred and fifteen elementary students in Taiwan was conducted to determine if the implementation of team collaboration would increase self-awareness and academic achievement. Results indicated that team collaboration, which is a method of DI not only increased student achievement, but also significantly impacted self-awareness positively in the learning environment. The study results suggested that students who feel included as part of team would continue to increase academic achievement (Chang et al., 2017).

Teachers and students in a community college algebra course experimented with a variety of learning and teaching methods. Students had increased completion rates compared with the same algebra class 1-year prior. A student evaluation of course instructors indicated that a variety of teaching methods were used in the classroom to assess whether there was an increase in student achievement scores. Videos and team collaboration were used combined with face to face interaction. The author recommended further research to determine if there was a positive link between increased scores and the implementation of differentiated-teaching methods (Chingos, 2016).

College attrition rates continue to be a problem for several higher education institutions around the globe (Flanders, 2017). Gensheimer and Diebold (2014) conducted an archival study to examine how individual course-level instructors could affect student retention rates in addition to overall academic student success. High performers and low performers were both analyzed along with their academic level and

major. Data were collected by examining academic majors, levels, attendance records and quiz scores. The authors looked for optional learning opportunities in syllabi to determine if DI methods were offered. They found that low performers were subject to traditional lectures, quizzes, and tests (Gensheimer & Diebold, 2014), but high performers were given a variety of learning opportunities. Moreover, researchers' findings recommended that instructors at the college level have the ability and control to practice DI methods that could result in the expansion of student achievement.

Diversity

This section will focus on DI focused on diversity learners. Language proficiencies, cultural backgrounds, and even personal interests among students are among the most popular themes to consider differentiation in the 21st century (Parsons et al., 2013; Pham, 2012). In addition, teacher evaluation systems that include how students were assessed (Whitehurst, Chingos, & Lindquist, 2014) may be effective in determining what teaching methods are most effective. A recent publication (Hwang, 2015) explored students' experiences with nontraditional teaching methods in a sociology course. An open-ended survey was given at the end of the course. The survey results indicated that students preferred differentiated methods such as team projects and service-learning projects versus traditional practices including lectures and tests.

Adopting DI methods in the 21st century is related to the expectation for students to become problem solvers and critical thinkers (Tomlinson, 2015). Furthermore, Tomlinson (2015) and Wu (2013) suggested that the implementation of differentiation would complement the growing diverse population of students relative to cultural norms,

economic backgrounds, languages, and individual interests by meeting the needs of all students. Moreover, differentiation strategies, such as the development of lesson plans based on intelligence levels which, may reflect student learning styles in addition to formative assessment among a variety of students, have proved effective.

Diversity of ethnic groups attending higher education institutions has grown by 22% between the years 2009 and 2015 (Widiputera, De Witte, Groot, & Maassen van den Brink, 2017). African Americans (9%) and Asian groups (13%) account for most of the increase in college enrollment rates. Sánchez Carmen et al. (2015) evaluated two different empirical studies of high school students, community college students, and university students. The objective of the study (*Diverse Sociopolitical Wisdoms and Ontological Healing in Sociopolitical Development*) was to determine how African American students developed sociopolitical viewpoints and what implications this had on them bringing their views into educational settings. Findings discovered by Sánchez Carmen et al. (2015) indicated that instructors who held classroom discussions on sociopolitical topics could enhance learning by collectively addressing opinions and perspectives for the development of critical thinking skills among students. The findings indicated that by invoking classroom discussions on sociopolitical topics, students were more likely to open up. As a result, increased development of critical thinking skills took place. Classroom discussions are likely to invoke students to feel more comfortable within their respective learning environment which, increases their willingness to participate in classroom discussions.

Rowntree, Zufferey, and King (2016) conducted a study to broaden the

understanding of what success at the university level meant to nine English as a second language students (ESL). Data were collected from a small-scale focus group using a methodological approach. The study's findings indicated that all nine students directly tied their success with what their family valued as success in addition to their individual ideas of success. In addition, students were motivated by their community desires for success. This study was not focused on teaching and learning but rather on how to enhance an overall understanding of what success means to ESL students and for the further development of how to correlate the findings with relevant teaching methods to increase success rates among a diverse student population. Findings of the study supported the recommendations of Rowntree et al. (2016) to include the implementation of increased community service-learning plans to expand learning experiences beyond the classroom.

Many college students who enroll in teacher preparation courses or administrative programs generally have to take courses about diverse people as prerequisites with the expectation that discussions regarding differences among peers relative to diversity will positively impact leadership and class instruction (Murray, 2016). Two hundred and eleven students, both undergraduates and graduates at a university volunteered to participate in a survey about attitudes of diversity and their learning experience in a diversity course (Murray, 2016). The results of the study found that 89.5% of participants collectively developed respect for their peers and for cultural differences because of the variety of interactive learning opportunities given by the instructor. In addition, participants believed that DI methods including group discussions, collaborative learning

and team projects not only helped them gain a better understanding of their peers, but they believed instructional methods enhanced their learning experience and would also contribute to self-development in future professional endeavors (Miles et al., 2013).

Although teachers and stakeholders may believe that schools are comprised of the same standards of content, and traditional teaching approaches, students of all ages and cultures have become increasingly diverse. Treating multiple differences among students within the classroom as a teaching strategy could be a compelling approach for teachers and students (Mete & Bakir, 2016). Teacher interviews and classroom observations of teaching styles took place over a 2-year period with two schools in Queens, New York. Pedagogical practices for effective teaching were developed upon the completion of the study. Forward momentum focused on not rushing students but encouraging them with enthusiasm to do further assignments. Explicit expectations were defined as teacher expectations of both learning and behavior. Behavior management, traditionally known as a discipline, can be done effectively through service learning or combining community service as an instructional strategy. Granting opportunities for students to play music and continue their work was one example of students' requests during teacher interviews (Mete & Bakir, 2016). Results of this study support Tomlinson's (2001; 2015) idea and theory that students of all ages, ethnic origins, religions, and backgrounds seek alternative opportunities to learn based on individual learning preferences.

Culturally responsive teaching is a method that acknowledges the significance of cultural contrast regarding the way students learn (Ladson-Billings, 1995). Educators need to be knowledgeable when teaching culturally diverse classrooms. What works for

one student might not work for all. Differentiation has proved to be effective when teaching culturally diverse groups (Baecher, Artiglieri, Patterson, & Spatzer, 2012). Teachers at an elementary school found that using instructional methods conducive to student groups such as modifying curriculum to include backgrounds of all students in addition to bringing in guest speakers from various cultures enhanced the teaching experience and the student learning experience (Ladson-Billings, 1995). Thus, culturally responsive differentiated-teaching methods may also prove effective in universities and colleges (Scott, 2014).

ESL students accounted for 9.3% of the student body in both undergraduate and graduate educational institutions in 2016 (Bobkina & Stefanova, 2016). Incorporating study of culture and literature in the classroom can be crucial to the development of creativity and critical thinking skills among the growing population of ESL students. Researchers conducting a case study suggested that the introduction of a variety of cultural literature can enhance the transformation of ESL students' learner accountability because students were involved in the dissection of the literature, which assisted them in the development of problem-solving and critical thinking situations (Bobkina & Stefanova, 2016). Furthermore, findings indicated that English language learners could also be positively affected by gaining knowledge of various cultural influences that impact the world around them (Bobkina & Stefanova, 2016). This section presented empirical evidence that various methods of DI may have a positive impact on a diverse group of learners.

Learning Styles

This section will focus on differentiated methods that include learning style strategies. The decline of traditional lectures has begun to take place because of the increased need for differentiation based on learning styles and needs of individual students (Wright, 2014; Weinberg, Hashimoto, & Fleisher, 2009). The importance of exploring learner's perceptions of classroom environments based on teaching methods and learning styles may contribute to a deeper understanding of the need for differentiation among higher education students (Wright, 2014). The perceptions of students in recent studies have revealed that students were more successful when given a mixture of choices to learn the content. In addition, students reported their learning experience was more enjoyable when given different options to learn the subject matter (Peng, 2016; Shay, 2013).

Teaching styles can have a direct impact on the way students learn. Educators must be responsive to learning styles so they can serve the needs of all students (Tomlinson, 2015). A study was conducted by Güzer and Caner (2014) with the intention to analyze and reflect on the pedagogical practice of blended learning relative to past, present, and future teaching practices. The authors wanted to take a closer look at the impact that blended learning had on a variety of learning styles (Güzer & Caner, 2014). What they found was that a group of university students had positive comments when taking blended-learning courses. Students commented that the combination of online learning tools and face-to-face activities made for a positive experience because it suited their individual learning styles.

Learning styles have been viewed as a positive tool for training both faculty and administration on an array of DI practices to accommodate a variety of learning styles in higher education in recent years (Broadbent & Poon, 2015). For example, a group of college administrators were trained by evaluating their learning styles through classroom observations so they could gain insight into how students experience learning.

Researchers reported that administrators believed they were compelled to explore individual learning styles further, to better accommodate students (Brookfield, 2015).

In a study of high school students, a positive connection was found between the use of individualized learning styles and overall academic achievement (Rezaeinejad, Azizifar, & Gowhary, 2015). An online questionnaire was used to access the randomly selected sample of students to assess their learning styles. When students could practice individually preferred learning styles, the score means were higher versus students who were not able to do so. Educators who assess learning styles may be making a positive contribution to overall academic achievement (Rezaeinejad et al., 2015). Moreover, further research may show the need for differentiation with accordance to learning styles.

Perceptual learning styles refer to how students interpret information (James, 2009; Newton, 2015). A study of students who attended different high schools within one school district underwent a study to examine the association between perceptual learning styles and academic performance. Perceptual learning is how students withdraw information or content through the use of the five senses. Results demonstrated that more females than males had perceptual learning styles. Furthermore, academic achievement had a direct correlation with perceptual styles of learning. The findings suggested that

there is a need for educators to recognize different learning styles and change instructional methods accordingly (Newton, 2015). Authors recommended using a mixture of teaching methods to benefit the greatest number of students (James, 2009; Newton, 2015).

Correspondence between learning styles and academic achievement in a secondary school and a private school were examined. The purpose of the study was to determine if traditional learning and DI methods including technology such as had an impact on academic achievement (Agnihotri & Agnihotri, 2015). A survey method was used to assess if there would be any difference in the learning styles and thinking styles of students in public schools versus private schools to assess achievement while using similar methods. Scores were used from the previous year and the current year. Findings of the survey indicated that there was no contrast between students thinking and learning styles among the schools. In addition, there were no substantial differences in achievement from one year to the next (Agnihotri & Agnihotri, 2015). A review of the literature suggested that students from each school regardless of the variances in DI methods did not experience increased academic achievement in either scenario.

The early development of study habits may help prepare university students for future career endeavors. Helping university learners become aware of their learning styles was important in that good study habits are essential for students to earn their degree in addition to preparing them for their careers (Gogus & Ertek, 2016). The authors examined how important personal attributes of students who attended universities were in terms of how to predict or categorize learning activities. In addition, the authors explored

how their perceptions and habits may or may not predict a learning style (Gogus & Ertek, 2016). Gender, living arrangements, grade, and grade point average were examined in the sample. Findings of Gogus and Ertek's (2016) study infer that the converger learning style was a theme among the majority of students. Convergent learning students tried out their ideas to see if they work. In addition, differentiated methods, such as group studies, active class participation, and study planning, were among the most attractive activities to the converger population of students relative to learning activities.

College freshmen in Latin America between the ages of 17 and 36 participated in a study to examine how learning styles affected their learning process so academic achievement scores could be increased (Freiberg Hoffmann et al., 2015). The authors also wanted to assess the student's motivation for learning. Academic and demographic surveys were used to collect data in this quantitative study. The categories consisted of gender, age, major, and academic achievement. Results indicated that the converger learning style had a negative correlation with achievement (Freiberg Hoffmann et al., 2015). Students reported that traditional teaching styles did not allow students to test new ideas. Kinesthetic learning was the most preferred style for the improvement of academic achievement and student motivation for learning because of the implementation of collaborative learning opportunities (Freiberg Hoffmann et al., 2015).

It is important to understand students' learning styles (Tomlinson, 2015). One reason is to ensure academic success. A recent study, of which 250 high school students of Hispanic descent participated, endeavored to reveal if one learning style was dominant over other learning styles. In addition, the study aimed to explore if there was a

relationship between mathematical achievement and learning styles. The literature inferred that there were no significant variances in scores between females and males. Furthermore, most of the females were found to be visual learners (Shirvani, 2016). The students with visual learning styles had significantly higher math scores than those who learned kinesthetically (Shirvani, 2016). In this instance, there was a relationship between math scores and learning styles. This information could assist educators on how to better facilitate teaching methods for students who do not share in the dominant learning style relative to mathematics.

Traditional instruction in higher education has historically included lectures (Tomlinson, 2015). It is suggested that lectures in universities are not reaching all students' learning needs based on student feedback from several various community colleges nationwide. The ASA (American Sociological association) consists of community college, college, university faculty, researchers, and students. All members contribute research to publish journals such as the information provided in this section. As enrollment continues to increase, classes get larger (Nation Center for Educational Statistics) case study on teaching and learning methods in a sociology class revealed that lectures were not adequately meeting the diverse needs of learners. The authors suggested exploring diversified teaching methods so that students could have a multidimensional learning experience instead of a one-dimensional experience (Sociology Instruction in the Community College Context, 2015). It was further suggested that learning styles should be taken into consideration so that students can learn to the best of their ability and get the most out of their college experience.

There is a lack of research regarding learning styles in colleges. A study of students in a physician's assistant program was undertaken to examine students learning styles from the beginning of the program to graduation. What the authors found was that students had adaptive learning styles. Adaptive learning styles use computer algorithms to interconnect with the learner and then tailors learning activities to the needs of each individual learner (Compton & Compton, 2017). The question of the study was if learning styles changed through various levels of the program as more knowledge and experience were gained. What they found was that learning styles did change at different stages of their education. Furthermore, the authors recommended that multiple learning styles should be considered when designing instruction.

The Flipped Classroom

In this section, I focus on differentiated methods focused on flipped classroom strategies. The pedagogical model of the flipped classroom originated in 2012, primarily in kindergarten through Grade 12 education (Srivastava, 2012). The flipped model consists of reversing the typical homework and lecture components; specifically, lectures are delivered by using recorded videos to be watched for homework while typical homework applied assignments are done in class with the facilitation of the teacher. The flipped classroom is yet another form of differentiation that can allow students to move learning activities that may have been considered previously as homework into the classroom. This would benefit students by allowing them more time for other activities with school sports or family. Furthermore, students can ask questions when doing their learning activities. Traditional lectures do not benefit the way that humans learn because

they are too one-sided and fast (Hodges, 2015; Strohmyer, 2016). Recording lectures is a benefit of this model because students are able to listen, which aids them in learning at their own pace. Giving short quizzes after students have had ample time to soak up the recorded lecture can give the instructor an idea of students' understanding of the material. Furthermore, using flipped classroom strategies and tracking grades in relation to flipped activities may help educators determine if this differentiation strategy contributes to overall student success including increased or decreased grade point averages (Szpunar, Moulton, & Schacter, 2013).

With the rapid growth of technology, educational stakeholders must make needed changes to implement a variety of technical devices as learning tools with respect to the flipped classroom model. Preschoolers now have smart boards and iPads as part of their normal academic routines. Differentiation has never been more attainable as a result (Akın, 2016). Fifty-eight junior high teachers were surveyed regarding flipped classroom practices. Ninety-nine percent of the teachers reported that they would continue to use flipped classroom methods. Teachers reported an increase in team-based skills as well as student engagement. Furthermore, they reported that variety in content and activities particularly on-line kept students interested and more likely to complete their homework. A common flipped classroom strategy is to video tape lectures. Teachers reported that using 10-15-minute videos kept students more engaged (Schmidt & Ralph, 2016).

According to Entezari and Javdan (2016), traditional teaching methods that include mostly lectures may not challenge students in becoming critical thinkers as much as flipped classrooms might. Students learn subject matter when they have direct

involvement in the learning process (Entezari & Javdan, 2016). According to Entezari & Javdan (2016), implementing flipped classroom strategies such as class discussions, allowing a variety of students to verbally challenge one another in addition to brainstorming ideas have been effective. Self-efficacy has proved to be increased when students worked aside classmates to problem solve because it encouraged them to form their own ideas and opinions (Entezari & Javdan, 2016).

The flipped classroom allows students to come to class with subject matter and receive help from the classroom instructor (Kara, 2015). Although some students have educated parents who could help with homework, other students may not have the same advantage. According to Schmidt and Ralph (2016), a case study showed that using web videos from a variety of sources proved effective for engaging students in the learning process. In addition, the study showed that teachers who showed 10- to 15- minute videos had success with keeping students engaged because students reported that they found the shorter videos kept them interested. Students also found voice-over PowerPoints to be boring. The traditional way of teaching focused on the *I do* method of instruction, whereas this form of differentiation focuses on the *you do, we do* method (Schmidt & Ralph, 2016).

Differentiation can take on many forms for meeting the needs of students (Moore & Chung, 2015). A study of high school algebra students was conducted to determine their perceptions and attitudes of learning in a flipped classroom environment. The student survey included quantitative and qualitative methods to provide a comprehensive understanding of how students perceived various elements of the model. The qualitative

findings for this study were as follows: there was a total of 25 students surveyed, students were all enrolled in sophomore or junior level algebra courses, 100% of the students owned a smartphone and a tablet device, and 100% had laptops or desktops at home. Out of the students surveyed, 64% found instructional videos to be helpful overall because of the variety of learning options (Moore & Chung, 2015).

The qualitative data results were as follows: 96% of students believed that comprehensive videos assisted them in learning subject matter. One student commented “it is like the teacher is here with me” (Moore & Chung, 2015, p.22). Furthermore, 96% of the students stated that videos assisted them with assigned classroom tasks and helped them to connect mathematical concepts. A common theme of this study indicated that most students found value in this DI strategy because they believed the visual aid of the video along with 24-hour access helped them to ultimately broaden their understanding of lesson plans and specific mathematical problems (Moore & Chung, 2015).

Educators must guide students of all ages and backgrounds to attribute both successes and failures to hard work. Therefore, it is critical to practice effective learning strategies to promote motivation for students’ desires to learn continuously. Li’s (2016) study of 152 college English as second language students showed that differentiated-teaching strategies met the learners needs because students achieved increased academic success when given options. Sinouvassane and Nalini (2016) found that younger students were more likely to adapt to a variety of instructional strategies as a result of generational differences relative to technology. The younger generation has essentially grown up with the use of technology, including smartphones, iPads, laptops, computers, and tablets as

the norm. Whereas baby boomers, for example, may not be as open-minded to delve into the rapidly growing world of technology (Chingos, 2016). Although there are many forms of differentiation, technology has become an obvious platform to enhance learning (Ching-Fu Lan, 2016). A study surveyed 24 first-year college science students and 27 ‘third-year’ college science students, enrolled in the same course with the same instructor (Sinouvassane & Nalini, 2016). Findings of this study inferred that first-year students were much more likely to engage in DI strategies that included modern day technology (Sinouvassane & Nalini, 2016). Technology sources included YouTube, webcams, and online discussion boards. Third-year students were less likely to engage in technology. The world of technology continues to rapidly grow resulting in an abundance of opportunities to implement a variety of DI methods (McLean et al., 2016).

The most often used method for delivery of instruction among higher education is the traditional lecture. However, this traditional method continues to lack effectiveness relative to both student learning and student engagement (Brown, 2017). Inverted classroom teaching methods in this qualitative case study indicated an increase in student retention as well as student engagement. Inverted teaching methods also known as flipped classroom models can be defined as providing a flexible space and learning environment for students to learn academic content in their own time. Often teachers consider what students should be learning on their own, and what should be learned in the classroom. Furthermore, the results demonstrated that inverted classroom teaching methods were an effective strategy for social change. Last, the study suggested increased instructor satisfaction due to the implementation of inverted classroom instructional

strategies (Brown, 2017).

Though the flipped classroom has become a welcomed teaching method over the last decade, there is still a gap in practice among higher education institutions because traditional teaching methods such as lectures are still the primary teaching method in higher education (Goates, Nelson, & Frost, 2017). Although kindergarten through Grade 12 schools has been the primary focal point of this model, recent studies show that applying the flipped classroom model in library instruction and workshops has had a positive impact on students' learning experiences among college students. Moreover, several studies among a variety of educational disciplines have measured student learning results between traditional instructional methods, including lectures and flipped classroom strategies (Chingos, 2016; Chien, 2014; Entezari & Javdan, 2016; Geelan et al., 2015). Many results showed an improvement in learning outcomes of students in a flipped classroom (Goates et al., 2017; Shaffer, 2016).

For example, a study comprised of high school mathematics students examined what their perceptions were regarding the flipped learning of calculus (Bradford et al., 2016). Bradford et al. (2016) found that most students preferred the flipped model versus the traditional model. Results specified that traditional methods made it tougher for them to get questions asked when doing homework after school (Bradford et al., 2016). In addition, students indicated that being able to use class time to do the required work was beneficial because they received more peer assistance and could address necessary questions, which boosted self-confidence and knowledge of subject matter (Bradford et al., 2016). Furthermore, students preferred the flipped learning model because of the

social interaction, peer collaboration, and self-directed learning they experienced (Bradford et al., 2016).

Service Learning

This section will address differentiated methods focused on service-learning strategies. According to the Institute of International Education (2015), there were 974,926 international students in the United States in the academic years of 2014 and 2015. The United States has the largest population of international students. Service learning has become a modern way of utilizing instruction for students from all walks of life to accommodate the diverse needs of learners (Chao et al., 2017). A study of 52 teachers illustrated that community service-learning training increased multicultural competence versus the training group that did not use community service learning as a means of instruction. Service learning has become one of many effective ways to reach a diverse group of students to encourage a deeper understanding of academics while cultivating personal development (Chao et al., 2017).

According to Lau (2016), there are benefits to using service-learning as a differentiated-teaching method. A study of occupational therapist students entering a master's degree program were interviewed to determine what students desired to learn, what they did learn, and unforeseen benefits of a service-learning project (Lau, 2016). The findings indicated that service learning created the mindfulness of community service, professional development, and a unique opportunity to learn through an experiential learning process (Lau, 2016).

A study of high school students who participated in a relationship-building,

service-learning project showed increased knowledge based on their experience opposed to the targeted outcome of the study (McElwain et al., 2016). The authors believed that the implementation of the learning project would benefit teens in their quest to build healthy and lasting relationships with peers. Community service learning has become a modern way to differentiate instruction encompassing students of all age groups. Benefits have been plentiful according to the literature (McElwain et al., 2016). Empirical studies continue to be conducted for the consideration of implementation for facilitators' training and experimental learning for students (McElwain et al., 2016).

Twelve undergraduate psychology students participated in a year-long service-learning plan to explore student perceptions of their abilities and knowledge to perform functional assessments. Students reported an increase of knowledge and abilities to appropriately perform assessments (Valdovinos, 2016). Students also reported growth in personal and professional development in addition to placing value on the learning opportunity. Community service learning has started to become a method of DI that not only benefits students but communities (Valdovinos, 2016).

Many faculty members are unfamiliar with how to use community service learning as a pedagogy (Bringle, Reeb, Brown, & Ruiz, 2016). The authors devoted this study to faculty development for the improvement, awareness, and implementation of successful service-learning projects. Suggestions were made to customize learning plans for specific areas of subject matter and career development. Providing training opportunities to faculty and teachers in both K-12 and higher education could positively contribute to alternative learning opportunities for students to effectively learn subject

matter in addition to enhancing potential career development (Bradshaw, 2016).

Preservice teachers were included in a study to determine bias based on their upbringing, life experiences, and perceptions of learning and teaching methods. The literature discussed the significance of community service learning with respect to teaching, socialization, and social justice. In addition, students evaluated their learning experiences and discussed perceptions of influence (Beaudry, 2015) regarding society and diversity (Beaudry, 2015). Community and diversity were topics of focus to highlight community service learning as a positive learning activity to enrich diversity among students and teachers (Beaudry, 2015).

Student-Centered Learning & Active Learning

This section will focus on differentiated methods involved in student-centered and active learning strategies. Student-centered learning has gained popularity as a technique to offer DI methods in kindergarten through Grade 12 schools and various colleges (Bradford et al., 2016). A study of undergraduates in a criminal justice statistics class in a large urban university setting demonstrated that pedagogical strategies were not being used because of low test scores (Bradford et al., 2016). The authors wanted to try a different approach and utilized student-centered learning opposed to traditional methods to see if test scores increased in addition to assessing if students felt confident in attaining subject matter knowledge. The findings inferred that test scores increased by using a student-centered, team-based learning approach. Students proclaimed that the teaching style was both effective in attaining and retaining knowledge of the material. Furthermore, the course instructors believed that a positive learning experience was

achieved and continued to use a team-based learning model (Bradford et al., 2016).

Active learning embodies student engagement through games, problem-solving activities, classroom discussions, debates, and student response exercises (Miller & Metz, 2014). Though many DI methods have proven effective, professional development programs for instructors has been scarce. A study compared college students' perceptions regarding active learning with nine faculty members (Miller & Metz, 2014). It was discovered that faculty members placed substantial reliance on lectures and reported that they rarely used games and other educational activities due to high levels of comfort conducting traditional lectures. Faculty stated they wanted to learn more about active-learning strategies but were deterred because they believed they would not have enough time to develop needed class materials. Moreover, students reported they learned best when participating in activities and associated unfavorable experiences with traditional lectures (Miller & Metz, 2014).

There are several philosophical approaches to teaching and learning including student-centered and active learning. Constructivism has become a vehicle to navigate what strategies to implement to enhance the learning experience (Singhal, 2017). Though some colleges have begun to use various methods of differentiation, there is still a gap in practice with the large number of universities and colleges that primarily depend on traditional instructional methods (Singhal, 2017). A study found that student-based learning was highly effective when students could use a variety of activities to reiterate course knowledge with their peers. This has been especially effective with the increased use of technology. There is growing literature on this philosophy of differentiation

because of reported success through a variety of empirical evidence (Singhal, 2017).

The President's advisory committee of technology and science (The White House, 2018) has requested a 33% increase in bachelor's degrees completed each year in areas of science, technology, engineering, and mathematics. Empirically supported literature is crucial to reaching that goal. To test the theory that lecturing maximizes learning performances in colleges, the authors analyzed 225 studies that revealed large failure rates and low exam scores in undergraduate mathematics, technology, science, and engineering courses that practiced traditional methods (Johnson et al., 2016). They assessed lecturing compared to studies that supported active learning to increase student performance. Active learning encourages student engagement by requiring students to participate in learning activities relevant to class content and subject matter. Results reported that exam scores improved by approximately 6% when engaging in active-learning activities (Freeman et al., 2014). Moreover, students who enrolled in courses with traditional lecturing were one and a half times more likely to receive a failing grade versus students involved in active-learning courses that taught the same subject matter. Educators must continue to research what the most effective methods are for teaching and learning. Methods may vary based on the subject, age, and setting of students (Freeman et al., 2014).

A study explored problem-based instruction as part of a student-centered learning strategy for undergraduate and graduate students studying social sciences at George Mason University (Mattson, Oberlies, & Hernandez, 2014). Problem-based learning is student-centered. Students learn about subject matter by solving problems through

hands-on experiences. Problem-based instruction is said to enhance self-discovery, therefore promoting learning outcomes (Mattson et al., 2014). Students were taking a library workshop focused on international relations and criminology. A review of the literature indicated that problem-based instruction was strongly supported by faculty (Mattson et al., 2014).

Researchers explored the key attributes of active learning by comparing three methods of learning activities in an introductory biology class. Writing, class discussions, and writing paired with discussions were investigated. Three instructors who taught three different writing classes with the same curriculum participated (Linton, Pangle, Wyatt, Powell, & Sherwood, 2014). Student aptitude, treatment, and instructor were independent variables, whereas scores on in-class exams and essays were dependent variables. Examination scores were significantly higher when writing was not the primary activity but when peer discussion was coupled with writing activities (Linton et al., 2014). Furthermore, instructors showed varying degrees of effectiveness when implementing active learning instructional practices. The authors recommended that instructors need professional development training to implement such strategies to ensure the success of learners (Linton et al., 2014).

Although there has been research conducted to support the influx and effectiveness of practicing DI methods, there is still little research that demonstrates the need for differentiation in colleges and universities (Wawrzynski & Baldwin, 2014). In response to the demand for community college completion, a large research initiative focused on high impact education has been set in motion (Wawrzynski & Baldwin,

2014). The initiative will identify educational practices in colleges for purposes of implementing modern instructional models to increase completion rates and will offer different avenues for learners to gain knowledge of chosen studies and disciplines. If evidence indicates high impact teaching methods are being used by educators, the community college research center will evaluate to what extent such procedures may or may not be part of the student learning practice. National surveys will be conducted with students, faculty, and administration on a national level to evaluate experiences with educational practices. The study emphasized the concern and need for further research into instructional practices in colleges and universities (Wawrzynski & Baldwin, 2014).

Teaching Styles

This section will focus on DI methods directed toward a variety of teaching styles used as a strategy to differentiate instruction. Teaching styles and learning styles should be considered when assessing effectual learning outcomes (Mete & Bakir, 2016). In a recent survey study, 32 science teachers and 1,494 students of a secondary school were assessed to determine what teaching styles were being practiced and what learning styles were present among students. There were no significant variances in teaching styles. Teachers primarily utilized a facilitator-expert model teaching style, which predominantly consists of lectures and learning material to be delivered by the facilitator. In addition, Mete and Bakir, (2016) found that student results indicated that there was a poor correspondence between teaching styles and learning styles. In this instance, the implementation of differentiated-teaching methods could benefit students and strengthen the relationship between teaching styles and learning styles (Mete & Bakir, 2016).

Philosophical preferences of teaching styles among educators may vary (Saritaş, 2016; Weinberg et al., 2009). Three hundred and one teachers who taught first- through fourth-grade students participated in a case study to explore the relationship between teacher preferences of teaching styles and actual teaching styles being used in the classroom. Results specified that teachers preferred an experimentalist philosophy but used a facilitator teaching style. The experimentalist philosophy focuses on the idea that experimenting with various teaching methods gives students a variety of options to learn with the hope of increased learning outcomes. Though teachers preferred an experimentalist teaching style but chose to use a facilitator style in their classrooms suggested that teachers may not be equipped with proper tools and professional development opportunities to implement other teaching strategies. Furthermore, there was a positive relationship between teachers' philosophical preferences and teaching styles. This may indicate that professional development may increase teacher willingness and knowledge to practice a variety of DI methods (Saritaş, 2016).

Teaching styles may affect student motivation (Kirby, Byra, Readdy, & Wallhead, 2015). A study of 12 classes of college students was conducted to see how two different teaching styles affected self-determined motivation. Students participated in two badminton lessons. One lesson used an inclusion teaching style and the second lesson used a practical teaching style. The inclusion style of teaching suggests the inclusion of all students in all learning tasks and activities regardless of their skill level. The practice teaching style focuses on students practicing activities after the teacher has demonstrated a task. The teacher observes students practicing, then gives private feedback. Students

took questionnaires to express student perceptions of motivation, learning, fun, and experience. Results revealed that students found both instructional methods to be equally effective. Moreover, students reported that motivation and satisfaction increased because their experience included a variety of learning styles that were not typical of previous experiences. Motivation and engagement of students could grow when using a variety of instructional approaches (Kirby et al., 2015).

There is recent literature showing empirical evidence that lecturer teaching styles do not produce high levels of student engagement (Shaari, Yusoff, Ghazali, Osman, & Dzahir, 2014). A study involving 266 university students was administered to identify the relationship between student academic engagement and lecturer teaching styles. The vast majority of lecturers used a personal model combined with an expert teaching style. Findings revealed that students were less engaged when teachers used a lecture approach teaching style in the classroom. Teaching styles have been found to have a direct impact on student engagement. A review of the literature suggested variation from traditional teaching methods for the possibility of heightened student engagement. Changing teaching styles may represent DI practices (Shaari et al., 2014).

Cooperative learning is a teaching strategy that emphasizes small teams of learners with different levels of ability to develop comprehension of subject matter by using a variety of learning activities (Çolak, 2015). Thirty-nine university students participated in a cooperative learning process study to determine if students with different learning styles were engaged in the instructional style and learning environment. To identify learning approaches, a study process questionnaire was implemented. Results

indicated significant changes in engagement in accordance with learning styles. Students' with cooperative learning styles and competitive learning styles showed increased levels of engagement versus students with participative, avoidant, and dependent learning styles. Researchers recommended giving more class time for activities in addition to implementing a variety of techniques to meet the needs of all learners (Çolak, 2015).

Teaching effectiveness may enhance learning outcomes in higher educational institutions (Paolini, 2015). Higher education is lacking methods to assess the quality of instruction within the respective classroom. Universities can utilize the student instructional report to gauge student perceptions of their college learning experiences. A study indicated that student perceptions caused a need for greater assessment of university faculty instruction. Evidence-based instructional methods can be used to measure teacher effectiveness in addition to students' satisfaction levels with their learning experience (Paolini, 2015). The authors suggested that instructors keep an open mind and demonstrate appropriate modifications in teaching styles in response to student feedback to achieve target learning objectives and to increase graduation rates (Paolini, 2015).

Teaching styles and learning styles may affect interactions with academic achievements (Damrongpanit, 2014). Three hundred and eighty-two ninth-grade students and 110 mathematics teachers were studied to decipher interaction effects on mathematical achievements. Twenty- six percent of students fell under a reflector learning style, whereas 34.55% of mathematics teachers practiced a facilitator learning style. This statistic is representative of teaching style preferences among math teachers

and suggests that subject matter may play a role in preferences of teaching styles. This may have an impact on learning outcomes but requires more research to determine if this is a factor of possible implementations of DI practices. Overall, 76.47% of total students showed interaction affected mathematics achievement scores. Reflector learners learn best when observing other people then reflecting on what they learned through observation. Students who had a theorist learning style demonstrated significantly higher achievement scores in contrast to students who had a reflector learning style (Damrongpanit, 2014). Theorists learners are known to be analytical, logical and systematic. Researchers highlighted the importance of capability of teachers to tailor teaching styles to student needs to fill mathematical achievement gaps.

Although there is empirical research on learning styles and teacher effectiveness, there is little research on the association between the two (Jepsen, Varhegyi, & Teo, 2015). A study aimed to establish the relationship between student perceptions of teaching quality and learning styles. Two hundred and seventy-two undergraduate students were surveyed to assess individual learning styles and respond to the perception of teaching quality. Findings disclosed that learners with activist or dominant reflector styles were impacted in perceptions of their lecturers, teachers, and teaching quality. Students who had pragmatist or dominant theorist styles had no perceptions of teaching relationships associated with the quality of instruction (Jepsen et al., 2015). Researchers suggested that teachers and lecturers encourage students to adopt learning styles that would maximize their learning experience and increase targeted learning outcomes. However, it is unknown if students can change their learning styles. Therefore, research

indicates the value of using DI compared to traditional teaching methods. (Jepsen et al., 2015).

Summary and Conclusions

Whereas most researchers agree on the importance of evolving education with the growing needs of learners, they agree less on methods to accomplish this. Though researchers have found the need for DI, they differ on strategies and various teaching models. In recent years, research on differentiation has focused on teacher effectiveness and achievement, various components of diversity, student-centered learning, community service-learning experiences, teacher and faculty development regarding the implementation of DI strategies, learning styles, teaching styles, and flipped classroom outcomes. There are approximately 25 articles in the above literature review regarding studies conducted at the college level with reference to a variety of DI strategies.

The literature reviewed for this study supports, through evidentiary studies, that teacher effectiveness and academic achievement can be influenced by use of DI pedagogical methods. Alternative instruction has proven effective in kindergarten through Grade 12 schools (Kane et al., 2013). Furthermore, a review of the literature infers corroboration through several empirical studies that diversity among the student population will continue to increase (Li, 2016). The literature also demonstrates that students learn through a perception of integrated knowledge. Students may integrate their knowledge, which is unique to the student to explore and solve problems. Therefore, individuals of various ages, socioeconomic circumstances, cultural backgrounds, and life experiences may interpret subject matter knowledge differently (Brown, 2017).

The present study contributes to filling one of the above-mentioned gaps by exploring how higher education instructors perceive their experiences with DI methods in addition to assessing what their perceptions are relative to such methods. Finally, researching how instructors describe their attitudes on being equipped with the necessary tools, strategies, and knowledge to effectively practice DI teaching methods will contribute to filling the gap in the literature. There has been little research concerning differentiation in higher education institutions with reference to implementation, professional development, and teacher and student perceptions which represents the gap in practice. This case study will extend knowledge to teachers, faculty, administration, campus directors, and university leaders related to practice in the discipline of DI. Chapter 3 includes specific details related to the research methods associated with the gap in practice and gap in the literature, the research design, and rationale in addition to the methodology, the role of the researcher, and plan for recruitment of participants with instrumentation for data collection procedures.

Chapter 3: Research Method

My purpose in this qualitative case-study was to explore perceptions of DI among instructors at a U.S. university because of reported lack of differentiation at a variety of campuses. Instructors contributed by sharing their experiences, perceptions, and attitudes regarding DI practices. Major sections of this chapter include the research design and rationale including the study's research questions as defined in Chapter 1. I also discuss the central concept and phenomenon of the study. I explain my role as the researcher, the methodology of the study regarding population and sampling details, and procedures involving participants in addition to instrumentation for data collection purposes. Furthermore, I discuss the trustworthiness of the study, and describe ethical procedures. Finally, I synthesize the main points of the chapter.

Research Design and Rationale

The following research questions guided this qualitative case study. Furthermore, the research questions provided the structure for analysis as well as data collection. In addition, the problem statement and purpose of the study dictated the formation of the research questions.

RQ₁. How do instructors describe their experiences with practicing DI methods?

RQ₂. How do instructors describe their perceptions of DI methods?

RQ₃. How do instructors describe their attitudes on being equipped with the necessary tools and strategies to practice differentiation in the classroom?

The central concept of this study was based on the need for DI methods to be

present in the respective college classrooms. According to Tomlinson et al. (2003), there is an increased need for DI as the student population in all educational arenas has become progressively diverse. Students vary in socioeconomic status, motivation, cultural backgrounds, language, abilities, and disabilities (Tomlinson & Imbeau, 2010); thus, the demand for DI methods is rising.

Qualitative research is consistent with examining experiences, attitudes, and or beliefs (Creswell, 2015). The research tradition used for this study is a case study. In a case study, the researcher analyzes, explores, and describes a group of people, a person, or an occurrence (Bogdan & Biklen, 2007). Because the purpose of this study was to determine how instructors at a U.S. university perceive use of DI, their attitudes regarding DI, and their ideas about the necessary tools and strategies to practice DI within their respective classrooms, a case study was appropriate and provided an in-depth analysis to address the research questions as suggested by Guetterman et al. (2015). A case study method is used because a case study focuses on a specific, bounded group such as instructors at the focus university who were instructors at a U.S. university (Creswell, 2015; Merriam, 2009). Gillham (2002) stated that a case study design is a bounded system that explores individuals, groups, institutions, and communities to affirm detailed experiences and to answer particular research questions.

Role of the Researcher

My role as the researcher included disbursing invitation emails to each campus director so they could send them to potential participants. I did not have any previous relationships or interaction with the participants. Furthermore, no supervisory

relationships between the participants and me took place. I did not have any previous communication with any of the participants, nor did I know any of them. Participants volunteered through a third party to be part of the research process (campus directors). Participants were currently employed as instructors at the U.S. university. However, they worked on a variety of campuses of which I have never taught at. Therefore, there has not been any foregoing interaction among or between me and the participants. I do not have any biases regarding DI. My role at the university was as an instructor at a Minnesota campus.

Researcher biases were managed by using an open-ended questionnaire that had been previously published relative to DI (Suskie, 1996). Open-ended questions versus direct questions work better in qualitative research because open-ended questions allow participants to share their views openly, which assists in eliminating bias (Creswell, 2016). In addition, there was not any discussion on my part or exhibit of biases relative to the topic of the study. Furthermore, I reviewed the questionnaires several times before writing results to be sure that I was analyzing the data with accuracy and objectivity. There were no other ethical issues that affected the integrity of the study. The participants were asked to answer the questionnaire outside of their current work environment on private computers or laptops for confidentiality purposes.

Methodology

A qualitative case study was chosen because it is conducive to exploring a central concept or phenomenon (Creswell, 2015; Fetter & Freshwater, 2015). In addition, a case study is used to build a case regarding a particular population and uses a variety of data

sources to support the case (Merriam, 2009). For this case-study, I included a 13-question questionnaire previously published by a scholar (Suskie, 2016; see Appendix A). The questions that I used were directly related to the research questions. Therefore, a case study was an appropriate fit because it will enable me to describe instructors' perceptions, attitudes, and experiences relative to being properly equipped with tools and strategies to practice differentiation at a variety of settings.

Participant Selection

The population included instructors at a U.S. university who taught a variety of subjects on various campuses. The sampling procedure was purposeful and emphasized the maximum variation strategy. This strategy was chosen to ensure variety among participants relative to perspectives, experiences, length of their teaching career, and teaching styles. The criteria on which participant selection was based included ensuring none of the participants held supervisory positions over other participants. Furthermore, the criteria required that participants had taught a variety of subjects, which offered a variety of experiences and perceptions to make for a well-rounded study.

The study included 11 participants. Two to three instructors were selected from four different campuses in the focus area who volunteered to be part of the study. Participants met the criteria based on the aforementioned sampling strategy. I chose participants from the U.S. university who were presently teaching courses because students from the university participated in a fall end of term survey indicating there was lack of DI. Having 11 participants provided several different perspectives with respect to their individual teaching experiences.

I communicated with campus directors in the focus state so that they could disburse invitation emails to teachers to participate in this study. A host site was used, and a link was included in the invitation emails so that participants could take the questionnaire. Implied consent was utilized when participants voluntarily went to the host site to complete the questionnaire. I asked participants in the invitation email to double check their answers to ensure they believed they answered the questions honestly and accurately from their perspective, and then place an X next to this statement at the end of the questionnaire to serve as an electronic transcript review. The questionnaire was consistent with the research questions and reflected relevancy to the research questions so that the experiences, attitudes, and perceptions of instructors could be examined.

Participants were identified based on the above-mentioned criteria. The CEO of the focus university granted permission to conduct this study and for campus directors to recruit two-three volunteers from each campus. A letter of invitation was sent to participants through each campus director via email. Furthermore, a letter of cooperation was completed stating permission from the CEO to conduct this study (Appendix B). Upon Walden University IRB (International Review Board) approval, a letter of cooperation was sent to the campus directors via email on each of the four campuses asking that they disburse the invitations to teachers on their campus. In addition, consent forms were included with a link to the host site. However, implied consent was used when instructors went to the host site to complete the questionnaire. When participants went to the host site to complete the questionnaire it implied that each participant agreed to participate in the study by taking the questionnaire. It was desirable to have both males

and females to identify possible themes among perceptions related to individual experiences with differentiation. However, since the questionnaires were completely anonymous, it cannot be known how many males and females participated in the study. Last, participants were selected from 4 different campuses to ensure variety for purposes of quality of data.

Instrumentation

A 13-question pre-published questionnaire (Appendix D) relevant to DI was used as the primary and only instrument for data collection. The instrument was published in 1996 and was used to interview teachers with respect to their ideas about DI. Permission from the author was given to use the instrument (Appendix D). In addition, the publisher gave permission to use the instrument (see Appendix E). Content validity was established by using the previously published questionnaire, which focused on measuring instructors' ideas and perceptions relative to DI. For this study, the pre-published questionnaire had been accepted as adequately representing instructors' experiences, perceptions, and attitudes regarding DI. Furthermore, the open-ended questions included in the questionnaire aligned with the research questions. To demonstrate that the questionnaire was sufficient for answering the research questions, I provided a table to present the specific questions on the questionnaire that aligned with each research question (see Table 1).

Participants were directed to a host site to take the questionnaire. Furthermore, participants were asked in the invitation email and consent form to review their answers to the questions before submitting them, so they could reflect on their answers and feel

that they were an accurate representation of their perceptions, attitudes, and experiences.

Procedures for Recruitment, Participation, and Data Collection

Campus directors of a U.S. university at each individual campus are responsible for the operations of the campus including all departments. Therefore, campus directors of each campus were contacted via phone to explain the purpose of the study, how many participants were desired, and any other pertinent details related to the study. Campus directors were then emailed IRB approval from the U.S. university IRB board in addition to Walden IRB (#02-05-19-0515028) approval as evidence that permission was granted to move forward with the study. Campus directors were then asked to disburse the invitation emails and consent forms so that participants had a clear understanding of the purpose and details of this study and so that they knew what participating in the study entailed. participants were asked in the invitation email and consent form to review their answers to the questions before submitting them, so they could reflect on their answers and feel that they were an accurate representation of their perceptions, attitudes, and experiences regarding DI methods.

Once all participants were identified, I developed an introductory letter and added it to the Survey Monkey questionnaire. I emailed the Survey Monkey questionnaire to selected participants and gave them 10 days to complete the questionnaire. All questionnaires were completed after eight days. I then downloaded the completed questionnaires and printed them to begin the data collection process.

A debriefing through a word document was sent to the campus directors once I

received the questionnaire. The de-briefing included the research questions, methodology, and a set of talking points regarding the completed study. Campus directors used this information to recruit participants. Participants were thanked and informed of how they may have possibly impacted social change through participating in the study after I received the completed questionnaires.

Data Analysis Plan

Qualitative data analysis is generally an inductive process. The process includes organizing and interpreting the data so the researcher can describe what the data entailed. This is often done by creating themes from emerging ideas (Creswell, 2016; Poon, 2015).

The data from each participant in this study were confidential and anonymous so there was no way that participants' answers could be shared among participants. In other words, each individual participant's questionnaire answers were kept confidential and each participant was anonymous. The data were connected to each specific research question because the previously published questionnaire from the publisher included open-ended questions emphasizing possible attitudes, perceptions, and experiences regarding DI practices.

To begin analysis, I first downloaded the questionnaires and printed them all off to have hard copies for data analysis. I labeled each one with a number so I could refer to each participant by labeling them 1-11 during analysis. The data analysis was done by reviewing each questionnaire. I first read and reread the answers from all 11 participants several times, and then entered comments in my research journal. I then coded the data by using key words from the literature review relative to empirical research. In addition, I

included key words from the purpose of the study as codes. I used 28 codes when analyzing the data (see appendix B). Next, I created themes from the emerging ideas I had coded. The findings focused on concepts and insights of participants to illustrate an explanation of instructor responses. Since qualitative research does not focus on numerical data to present findings, it is paramount for the researcher to be thorough during the data analysis process to accurately interpret participant responses (Dooley, 2002). By rereading the data and emerging coded ideas, I was able to develop appropriate themes.

I analyzed the data with coding in three different ways. I first organized then analyzed the data according to categories of teaching subject and time teaching. Next, I analyzed the data looking for overall ideas and themes not related to categories. Last, I organized instructor responses into themes to answer the research questions. The research questions are matched to each number of interview question from the questionnaire in Table 1.

Table 1

Research Questions Matched to Survey Questions

Research questions	Number of questionnaire questions
RQ1. How do instructors describe their experiences with practicing DI methods?	Questions 2,3,4,5,10
RQ2. How do instructors describe their perceptions of DI methods?	Questions 1,6,7,8

RQ3. How do instructors describe their attitudes on being equipped with the necessary tools and strategies to practice DI in the classroom?

Questions 9,11,12,13

Note. Research questions were developed based on the problem that inspired this study.

Discrepant Cases

Discrepant cases, which are cases that may contradict the rest of the data or provide unexpected findings, will be discussed in the findings section of this study (Creswell, 2016). Discrepant cases may provide evidence that further research is needed or ultimately support the theory depending upon what the discrepant cases findings involve. In this study, discrepant cases were treated like the rest of the data. I searched for elements and possible patterns throughout the data that might have disconfirmed or contradicted emerging themes. Last, findings derived from possible discrepant cases are discussed.

Trustworthiness

Trustworthiness refers to the level of confidence regarding data, research methods and interpretation to confirm the quality of a study (Creswell, 2015). To establish trustworthiness, accuracy checks took place. Accuracy checks is a process where the researcher asks the participants to check the accuracy of the researchers' data analysis (Creswell, 2016). Quantitative researchers and qualitative researchers use different methods for data collection and data analysis. In addition, qualitative research is

approached by researchers using different perspectives of actuality (Merriam, 2016).

Trustworthiness in qualitative research is established by addressing credibility, transferability, confirmability and dependability.

Credibility

One aspect of credibility is triangulation. Triangulation refers to using a combination of different strategies, data sources, or theories to develop a comprehensive understanding of the data and to ensure credibility (internal validity) of a study (Creswell, 2016). Eleven instructors from a variety of campuses participated in an open-ended questionnaire. Campus directors were asked to recruit instructors who taught in different subject areas, which assisted in attaining credibility. Teaching in different departments assisted in attaining credibility because different subject areas may have utilized specific teaching strategies that other subject areas may have excluded. For example, a math teacher may use a different strategy than an interpersonal communication teacher. This could have caused different themes to emerge making for a well-rounded, credible study. In addition, each participant took the same questionnaire.

To enhance credibility, transcript reviews were used at the end of the questionnaire to ensure the accuracy of responses. I asked each participant to double check their responses. For example, each participant was asked to place an electronic X next to their answer for each question to ensure they double checked their answers for accuracy.

Transferability

Transferability (external validity) refers to the level the research can be

generalized to a larger population or setting (Bogdan & Biklen, 2007). Variation in participant selection were used to establish transferability. To establish variation in participant selection, I asked the campus directors to recruit instructors that taught a variety of subjects. I thought this would be important because it could have provided different perspectives relative to the attitudes, experiences, and perceptions regarding DI. These methods assisted in demonstrating possible transferability in this study.

Dependability

Dependability is an important component of trustworthiness because it demonstrates that the findings are consistent with the data collected (Creswell, 2016). First, dependability was addressed by having participants double check their answers. In addition, the data were reread and analyzed several times, three different ways, to ensure that the data collected supported the results. Triangulation as previously described, was used by including participants from a variety of locations and programs.

Confirmability

Confirmability was established by reviewing the data and the answers of the questionnaire many times to verify that the findings indicated only answers from the participants and did not include bias from me as the researcher. Eleven instructors participated in an open-ended questionnaire from a variety of campuses. Campus directors were asked to recruit teachers who taught in different subject areas which, assisted in attaining confirmability. For example, a mathematics teacher may use a different strategy than an interpersonal communication teacher. This could have allowed

different themes to emerge making for a well-rounded, objective study. Furthermore, I sent my initial conclusions to the campus directors to distribute to the participants.

Reflexivity

Finally, I used reflexivity to address biases I may have. Reflexivity refers to a process in which the researcher reflects on her or his own values, assumptions, and possible themes that may surface during data collection (Patton, 2015). Therefore, reflexivity was used throughout the data collection process to indicate confirmability. I carried out reflexivity by making several notes on my computer during data collection. Each time I analyzed the data, I referred to my notes and added new notes. After analyzing the data several times, I went back and analyzed all notes to ensure that they reflected true answers from the participants and not my own bias based on my interpretation.

Ethical Procedures

Participants were treated with respect and confidentiality; the IRB approval letter from the U.S. university is included as Appendix C and the Walden IRB approval letter (# 02-05-19-0515028) is included as Appendix F. Permission from the author of the survey is included as Appendix D. Finally, Appendix E contains permission from the publisher to use Linda Suskie's survey; *A Research Questionnaire Survey-What Works*.

Ethical concerns related to data collection included the possibility that participants may have refused to participate or withdraw early from the study due to unforeseen circumstances or a change in willingness to complete the data collection process. Other ethical concerns included teacher bias based on individual beliefs and or experiences

regarding DI practices.

Informed consent is an agreement to participate in research voluntarily. Informed consent safeguards were used for the protection of participants. For example, there was no pressure to participate in this study. Each participant volunteered to participate in this study. Furthermore, all responses were kept confidential and participants were informed that they could quit participating in the study at any time.

There were no ethical concerns related to the recruitment process or materials for the process. More specifically, campus directors were asked to recruit participants by using the invitations I provided. In addition, instructions on how to participate in the study if instructors chose to volunteer were given to campus directors. Also, instructors that chose to participate were told they did not have to inform their campus directors or colleagues. Last, data collected from participants were anonymous. I never learned the names of any of the participants. Data were stored in a private password protected electronic file. I will have access to the data as well as Walden university staff. The data will be destroyed after 5-years have passed per research policies and requirements.

Summary

Chapter 3 included the central concept and research questions of this qualitative study. The purpose of this study was to determine how instructors at a U.S. university perceive use of DI, their attitudes regarding DI, and their ideas about the necessary tools and strategies to practice DI within their respective classrooms. The purpose and intent of the study were described to give the reader an extensive understanding of why the study was conducted. The role of the researcher as a participant was described as well as the

methodology with outlined data collection methods and strategies consistent with qualitative research. Instrumentation and sampling strategies were discussed in addition to a plan to achieve trustworthiness by establishing appropriate strategies to attain credibility (internal validity), transferability (external validity), dependability, and confirmability. Finally, ethical procedures were provided including a letter of cooperation with the research partner, an invitation to potential participants', the IRB adult consent form, and, last, the questionnaire that was administered to a host site, so participants could remain anonymous when they volunteered to participate in this study.

Chapter 4 includes a review of the study purpose, and methodology. Furthermore, I describe the setting in which the data collection process took place. In addition, I provide a thorough demonstration of results and trustworthiness of the study.

Chapter 4: Results

The purpose of this study was to explore instructor's perceptions, experiences, and attitudes relative to DI. The problem was a reported lack of DI in a student end-of-course fall survey at a U.S. university. The following research questions guided this qualitative case study: RQ1: How do instructors perceive use of DI methods? RQ2: How do instructors describe their use of DI methods? RQ3: How do instructors describe their attitudes on being equipped with the necessary tools and strategies to practice differentiation in the classroom? In Chapter 4, I review the setting of the study, data collection procedures, data analysis procedures, and the results of the study, followed by a summary of the information included in this chapter.

Setting

No personal or organizational conditions existed to influence participants or their experiences at the time of the study that may have affected the interpretation of the study results. Since all participants remained anonymous, there is no way to know if there may have been personal or organizational issues for individual participants. There were a total of 11 participants in this study. The participants were recruited by college campus directors at four different campuses in the southern United States. Four of the 11 participants reported to have been teaching at the college level for over 15 years, five of the participants reported to have taught between 3 and 6 years, and two of the participants reported to have taught for under 3 years. The participants taught a variety of subject areas according to the results of the questionnaire. Six of them reported to be

mathematics instructors. Three participants reported to teach marketing and management courses or a combination of business courses, which included marketing and management courses. Two participants reported to teach career path planning courses. Career path planning courses include assisting students with resume writing, cover letter writing, mock interview assignments, and goal setting exercises. The ages, names, and genders were not included to protect the identity of the participants.

Data Collection

Eleven instructors participated in this study from which 11 questionnaires were used as the primary and only instrument for data collection. I set up the questionnaire using Survey Monkey. The 11 participants were invited to visit a host site (Survey Monkey) to complete the 13-open-ended questions. A link to the host site was included in the invitations to participants and was given to them by their campus directors for anonymity and confidentiality purposes. Participants were asked in the invitation to take the questionnaire within 10 days of the invitation email on a private password locked computer or lap-top outside of their work environments for confidentiality purposes. Using a host site protected the participants' identities, and, therefore, the participants remained 100% anonymous. It is to be assumed that participants answered the questions in their private dwellings and outside of their work environments. Furthermore, participants were asked at the end of the questionnaire to double check their answers for accuracy and then asked to place an electronic X next to the statement to acknowledge that they had double checked their answers and agreed that they had answered each question accurately based on their perceptions, attitudes and, experiences relative to DI.

This method was used as a form of transcript review to ensure participants were satisfied with their answers. The data collection process took approximately eight days. The data were recorded through the host site. I then converted the results of the questionnaire into a password protected electronic file on a private computer. The questionnaires were numbered so that specific answers of each participant could be easily identified when interpreting and describing the results. An inductive approach was used for data analysis and included an interpretive philosophy by examining the differences and similarities of questionnaire comments. There were no variations in data collection from the plan that was presented in chapter 3. In addition, there were no unusual circumstances encountered in the data collection process.

Data Analysis

Data analysis started after I downloaded all of the questionnaires from survey monkey. I printed out each questionnaire so I could have hard copies. I then read each one five times to ensure I had a concise understanding of each answer on each questionnaire. Then, I started to analyze each one by using open coding. I used open coding because with that process, I was able to capture emerging ideas, which I was later able to develop into themes. (Creswell, 2015; Dooley, 2002). To do the coding, I looked for phrases and words that emerged from reading the data. Coding is the process of organizing information into text sections, identifying the sections, and designating code words or phrases that describe the meaning of the text sections (Yin, 2013). In order to move inductively from coded units (see Appendix B for list of codes) to more significant representations, clusters of related codes were used to develop possible emerging themes.

I reported the findings first according to specific categories, then I presented the findings in themes. As I analyzed, it seemed important to first look at the various categories of instructors, then at overall themes. The following categories used to first analyze the data were (a) mathematics instructors, (b) business and marketing instructors, (c) instructors with over 15 years of experience. Possible overall emerging themes from entire data were then examined and identified based on the answers from the questionnaire that were primarily guided by the research questions. The overall themes were: (a) implementation of DI, (b) professional development opportunities, (c) positive and negative attitudes, (d) perceptions of DI, and (e) diversity was present in all classrooms.

As I analyzed the data, I looked for possible discrepant responses or those that may be different from the majority. Discrepant cases are those with data that may contest the theory or the projected findings of the study (Dooley, 2002; Patton, 2015). Upon examination of the data, there were no discrepant cases found. Inconsistent patterns were not detected in the analyzing of the data, and therefore, discrepant cases were not an issue in this study.

Results

The findings are reported first according to the categories of participants, then according to overall themes developed in analysis of the collected data. Finally, the analysis from categories of participants and overall themes is summarized demonstrating answers to the research questions. The participants were first placed into the following categories and responses were analyzed: (a) math instructors. (b) business and marketing instructors. (c) instructors with over 15 years of teaching experience. (d) Instructors with

fewer than three years of teaching experience. Codes from the first categories were used to determine patterns or themes. The following information will include the codes and describe the themes that emerged from the data analyzed according to the categories. Quotes from participants are presented to justify the themes. Participants will be referred to by numbers 1-11. I coded 28 emerging ideas to develop themes using open coding (see Appendix B).

Categories of Participants

Category 1- math instructors; These instructors reported that they knew what DI methods were, but the primary teaching method for the majority was still through notetaking and lectures. Five out of the six mathematics teachers reported that they were aware of what DI was, but that their primary teaching method was through lectures, tests, and quizzes. For example, participant 4 stated “I have always taught by giving lectures, then assessed student knowledge with quizzes and chapter tests”. The second common theme was that lectures and note taking were the primary teaching method. Both of the career path planning teachers reported to know what differentiation is and also reported to use differentiation in their classrooms when working on specific assignments such as resumes and cover letters, but also reported that lectures, and note taking were still the primary teaching methods throughout their courses. For example, participant 6 stated “I bring in a guest speaker to discuss the importance of building a resume to land interviews”. Participant 7 stated “I use sample resumes and cover letters as visuals on the projector so students can see different ways to write theirs”.

Category 2-business and marketing instructors; All three business and marketing teachers reported that they use DI methods based on the needs of their students. Participant 1 stated, “ I use live demonstrations when students are putting together resumes and cover letters, but my primary teaching method is lectures and small quizzes.” Participant 2 stated, “I bring in a guest speaker once per semester as a motivational tool for students but would like professional development opportunities to learn more about DI methods. ” Participant 3 stated, “The curriculum calls for us to use a book that also provides quizzes at the end of each chapter.” Participant 3 also stated “I’m not sure how to implement DI with the curriculum I have to teach.” All 3 participants stated that they hold class discussions after each lecture so that the students can give feedback and ask questions after delivering content. Additional themes emerged based on years of teaching experience.

Category 3-instructors with more than 15 years’ experience; Four teachers who had over 15 years of experience all reported that they would like to have tools and strategies through professional development opportunities to educate them on modern teaching methods in reference to differentiated methods. Two of the five teachers who had three to six years of experience reported that they did not believe they had the tools and strategies to implement DI methods because of lack of knowledge of how to implement them in their classrooms. The remaining three teachers who had three-six years of experience gave ambiguous answers to questions pertaining to if they believed they had necessary tools and strategies to practice differentiation. For example, two of

them said they were not sure if they had necessary tools and strategies to practice differentiation while the last teacher's response was left unanswered.

Category 4-instructors with fewer than 3 years' experience; Both of the instructors who have taught for less than 3 years disclosed that they believed they did have the necessary tools and strategies to practice a variety of teaching methods and believed it was important to change strategies based on the needs of students. For instance, Participant 6 stated, " I use group projects at least 4 times a semester so students have the opportunity to collaborate and work as a team." Participant 8 stated, " I implement a service-learning project at the beginning of the semester that students can participate in during the class at designated times".

Overall Themes

The following themes were developed from the emerging ideas through analysis of overall data (see Appendix B) and are presented in Table 2.

Table 2

Overall Themes

Themes of DI

- (1) Implementation of DI varied: Some instructors used DI.
- (2) Professional development opportunities desired: Nine of 11 instructors wanted PD.
- (3) Positive and negative attitudes toward DI: Some instructors wanted to learn more about DI, and others believed that traditional teaching methods were sufficient.
- (4) Perceptions of DI: Instructors believed that they knew what DI was but did not know what methods to implement because of lack of knowledge.
- (5) Diversity was present in all classrooms: All instructors reported diversity in their classes.

Note. Themes were developed from instructor responses

After the themes were developed from instructor responses on the questionnaire, I then went through the research questions to see how and if the themes aligned with the RQ's. I then analyzed the themes again to identify how they would answer the RQ's. The themes did align with each RQ. Therefore, I used the themes collectively to explain each RQ below.

RQ1: How do instructors describe their experiences with practicing differentiated instruction methods?

Instructors at the focus university described their experiences regarding the practice of DI methods in a variety of ways. For example, participant 8 described her experience as “using videos, notes, drawings, photos, and occasional guest speakers”. Participants 1,2,3, 4, and 5 were math teachers, and proclaimed to primarily use lectures and note taking as their primary teaching method not using DI. Participant 6 stated “I often ask students open-ended questions to generate critical thinking about a subject or concept.” Participants 10 and 11 had similar answers and both emphasized that “students learn in different ways.” They disclosed that collaborative learning strategies were implemented into their classrooms regularly including case studies and class discussions. Participants 7 and 9 reported they did not have very much experience with DI in their classrooms except for on specific assignments including assisting students in writing resumes and cover letters.

RQ2: How do instructors describe their perceptions of differentiated instruction methods?

All 11 teachers accorded that DI to them meant using different strategies and teaching methods in the classroom. Participant 3 stated “If my students are not understanding a concept, I alter my teaching method so that they understand the lesson.” Participants 4, and 5 stated that they bring in guest speakers once a term to talk about the importance of goal setting. Both of them teach career path planning courses. While all six mathematics teachers reported to understand what DI was, they also reported that their primary teaching methods consisted of lectures, note taking, quizzes, and tests. Participant 1, and 2 reported that their perceptions of DI involved meeting the needs of students by changing the way they taught when necessary. All 11 teachers reported to have a diverse body of students on a consistent basis.

RQ3: How do instructors describe their attitudes on being equipped with the necessary tools and strategies to practice differentiation in the classroom?

Eight of the 11 Instructors reported that they could benefit from professional development so that they had specific tools and strategies to implement a variety of teaching methods into their respective classrooms. For example, participant 11 stated “There are so many different methods, that I get confused on what would be the most effective method to use in my classroom”. In addition, Participant 11 stated “if I had more knowledge of specific methods, I may be able to better decipher which ones to implement and which methods to leave out”. Participant 7 indicated that he believed his teaching methods had nothing to do with whether or not students did well in the course. More specifically, participant 7 stated “some students do well, some do not”. “I don’t think this has anything to do with my teaching methods. Some students just don’t apply

themselves”. It may be important to note that this teacher is a mathematics teacher and relies on lectures, note taking, quizzes, and tests. Furthermore, this instructor has taught at the college level for over 15 years.

All of the instructors reported to have used one or more methods of DI. However, the majority of instructors believed they would benefit from professional development to expand their knowledge on the variety of DI methods. All 11 instructors believed they knew what DI was, but were open to learning more because there are several methods, they wanted to learn more about. Implementing professional development would give instructors a deeper understanding of a wide array of DI methods.

Category 5-Diverse cultures were present in classrooms. All 11 instructors reported to have diverse cultures of students in their classrooms. Participant 9 stated, “ I have always had diversity in my classes, but the last 5 years it has increased significantly.” Participant 11 stated, “ I embrace diversity in my class and put them in groups of 2 at the beginning of the semester so they can learn about each other, this helps them to build rapport.” The remainder of the participants gave short answers to imply diversity in their classrooms. For example, participants 1,3,4,5,6,7,8,9, and 10 stated, “Yes, there is diversity in my classes.”

Evidence of Trustworthiness

Trustworthiness in qualitative research refers to the level of confidence regarding interpretation, data, and methods to ensure the study is credible (Merriam, 2009).

Trustworthiness is important because it provides evidence of quality that is similar to quantitative constructs of both validity as well as reliability to support the study.

Trustworthiness in qualitative research is about demonstrating credibility, transferability, dependability, and confirmability. Each instructor that participated in this study took the same questionnaire, which establishes an element of trustworthiness.

Triangulation refers to using a combination of different strategies to develop a comprehensive understanding of the data and to ensure credibility (internal validity) of a study (Creswell, 2016). Eleven instructors from a variety of campuses participated in an open-ended questionnaire. Campus directors were asked to recruit instructors who taught in different subject areas, which assisted in attaining credibility. Teaching in different departments assisted in attaining credibility because different subject areas may have utilized specific teaching strategies that other subject areas may have excluded. For example, a math teacher may use a different strategy than an interpersonal communication teacher. This could have caused different themes to emerge making for a well-rounded, credible study. In addition, each participant took the same questionnaire. Trustworthiness refers to the level of confidence regarding data, research methods and interpretation to confirm the quality of a study (Creswell, 2016).

Transferability refers to the level that results from the data can be generalized to another population, context, or setting. A thick description of participant experiences, perceptions, and attitudes relative to DI as well as variation in participant selection was used to establish transferability. Readers who have similar situations may be able to find similarities and information that is relatable. These methods assisted in demonstrating external transferability in this study. In addition, the results of this study can be generalized to instructors at different U.S. universities because DI has become a way for

educators to meet the needs of all learners (Tomlinson, 2015).

Dependability was established by having participants double check their answers. In addition, the data were reread and analyzed several times to ensure that the data collected supported the results. Dependability is an important component of trustworthiness because it demonstrates that the findings are consistent with the data collected.

Confirmability was established by reviewing the data and the answers of the questionnaire to verify that the findings indicated only answers from the participants and did not include bias from me as the researcher. Eleven instructors participated in an open-ended questionnaire from a variety of campuses. Campus directors were asked to recruit teachers who taught in different subject areas which, assisted in attaining credibility. Teaching in different departments also assisted in attaining credibility because different subject areas may have used specific teaching strategies that other subject areas may have excluded. For example, a mathematics teacher may use a different strategy than an interpersonal communication teacher. This could have allowed different themes to emerge making for a well-rounded, credible study. Electronic transcript reviews were used at the end of the questionnaire to ensure the accuracy of interpretations. For example, participants were asked if interpretations were accurate based on each participant's answers from the questionnaires, then asked to place an X next to each answer. Furthermore, I sent my initial conclusions to the campus directors to distribute to the participants. I indicated when sending the conclusion, should they feel any part of my initial conclusion to be inaccurate based on their individual answers, to reach out to me

through their campus directors. None of the participants reached out.

I used reflexivity to address biases I may have. Reflexivity refers to a process in which the researcher reflects on her or his own values, assumptions, and possible themes that may surface during data collection (Creswell, 2015). Therefore, reflexivity was used throughout the data collection process to indicate confirmability. I carried out reflexivity by making several notes on my computer during data collection. Each time I analyzed the data, I referred to my notes and added new notes. After analyzing the data several times, I went back and analyzed all notes to ensure that they reflected true answers from the participants and not my own bias based on my interpretation.

Summary

This study included 11 college instructors from four different U. S. campuses. Among the 11 participants, six of them were mathematics teachers, three of them were business and marketing instructors, and two of them were career path planning instructors. Four of the instructors had over 15 years of teaching experience, five reported to have between 3 and 6 years of teaching experience, and two reported to have under three years of teaching experience at the college level. Findings were presented first according to categories of experience, then by themes, and finally by RQ. The research questions guided the data but included a variety of answers including instructors' perceptions, attitudes, and experiences relative to DI practices.

The following information summarizes participants' answers for the three research questions. Some of the instructors reported using DI methods in their classrooms. The instructors who did report using DI described use of videos, photos,

drawings, and occasional guest speakers. Furthermore, mathematics teachers reported that their primary teaching method heavily relied on lectures, note taking, quizzes, and tests. Business and marketing instructors reported to use DI more often than the other participants. Career path planning instructors reported to use DI methods when assisting students with resume and cover letter writing in addition to having a guest speaker once a term to discuss the importance of goals. Last, all 11 instructors did report that they used class discussions.

All 11 teachers acknowledged that DI to them meant using different strategies and teaching methods in the classroom. However, eight out of 11 participants reported that professional development opportunities would benefit them so that they could have more knowledge on a variety of teaching strategies. It was reported that there was confusion regarding what different teaching strategies entailed. Therefore, instructors believed that if they were educated on such strategies, they would know which strategies to implement into their classrooms. The following themes emerged as a result of the answers to the research questions; Theme 1, Implementation of DI varied, Theme 2, Professional development opportunities desired, Theme 3, Positive and negative attitudes toward DI, Theme 4, Perceptions of DI, Theme 5, Diversity was present in all classrooms.

Chapter 5 consists of discussions, conclusions, and recommendations regarding this study. Key findings are discussed and interpreted. In addition, recommendations, and implications are presented. Last, there will be a final conclusion of the study.

Chapter 5: Discussion, Conclusions, and Recommendations

DI methods have become increasingly prevalent in K-12 schools over the last 10 years (Tomlinson, 2015). However, there is a lack of research regarding differentiation at the college level (Tomlinson, 2015). The problem identified in chapter 1 is a reported lack of DI at a U.S. university. According to a 2015-2016 end of course student survey at the participating campus over 50% of students expressed that they may have performed better on coursework if given a variety of learning choices. The survey was conducted at a U.S. university campus. The survey was not published. However, feedback was shared with instructors.

The purpose of this study was to determine how instructors at a U.S. university perceive use of DI, their attitudes regarding DI, and their ideas about the necessary tools and strategies to practice DI within their respective classrooms. Empirical evidence was provided throughout the literature review that highlighted the benefits of using differentiated teaching methods for both students and teachers (Agnihotri & Agnihotri, 2015; Allen et.al., 2016; Bradford et. al., 2016). However, evidence also suggested the need for DI methods to be present in college classrooms, yet gaps in practice at the college level surfaced (Tomlinson, 2015).

Using a case study design, 11 instructors volunteered to participate in a 13-open-ended questionnaire that was previously published regarding DI (Suskie, 1996). Though a pre-published questionnaire was used, the research questions below guided this study. I communicated with campus directors in the focus state so that they could disburse invitation emails to teachers to participate in this study. A host site was used, and a link

was included in the invitation emails so that participants could take the questionnaire. Implied consent was utilized when participants voluntarily went to the host site to take the questionnaire.

RQ1: How do instructors describe their perceptions of DI methods?

RQ2: How do instructors describe their experiences with practicing DI methods?

RQ3: How do instructors describe their attitudes on being equipped with the necessary tools and strategies to practice differentiation in the classroom?

After collecting the questionnaire, I converted the answers into an electronic file on a password protected private computer. I first organized responses into categories using subject areas as well as years of teaching experience. I then analyzed the overall data using open-ended coding of emerging ideas and then organized them into themes.

Five key findings emerged as themes for the study: (1) Implementation of DI, (2) professional development opportunities, (3) positive and negative attitudes, (4) perceptions of DI, (5) diversity was present in all classrooms.

First, instructors reported that they may not implement DI because they believed student achievement was solely up to students and learning had nothing to do with their teaching methods. The most often used method for delivery of instruction among higher education is the traditional lecture. However, this traditional method continues to lack effectiveness relative to both student learning and student engagement. Brown, (2017) conducted a study of eight college instructors to explore their decision-making processes of when to implement inverted classroom methods in their classrooms opposed to traditional methods, such as lectures. Brown (2017) found that inverted classroom

methods not only had a positive influence on social change among the student body, but also were effective in maintaining student retention.

The second key finding was that instructors knew what DI was, but wanted professional development opportunities to expand their knowledge of the variation of DI methods. Broadbent and Poon (2015) studied learning and teaching style awareness for professional development. They found that teaching and learning styles was a positive tool for continued professional development (Broadbent & Poon, 2015). Providing PD for instructors at the U.S. university including awareness of teaching and learning styles could positively impact both teachers and students.

The third key finding was that instructors had both positive and negative attitudes regarding DI. Whereas there are many theories relative to a variety of teaching methods, differentiation has many approaches, in lieu of differences in both teaching styles and theory (Allen et al., 2016). Brookfield (2015) found that the exploration of learning styles was important in order to accommodate the learning needs of all students, and also had a positive effect with regard to teacher attitudes regarding DI. Use of DI may be a way to help teachers accommodate various learning needs; instructors in this study indicated DI could help them do that, which confirms the information presented in the literature.

The fourth key finding was that instructors had different perceptions of what DI was in accordance with their own teaching methods. Tomlinson et al. (2003) suggested that the modification of academic content in addition to the process of developing different teaching methods are key factors for bringing DI methods into the classroom. Newton, (2015) conducted a study involving the implementation of a mixture of teaching

methods into the classroom. Findings revealed that using a mixture of DI methods benefited the greatest number of students. The findings in this study confirm the information that was presented in the literature review. The use of DI may be a way to meet the needs of all learners (Allen et al., 2016; Brookfield, 2015; Fountain, 2014; Li, 2016; Parsons et al., 2013; Tomlinson, 2015). Instructors desire PD opportunities to learn more about DI and to know which methods to implement into their classrooms. The findings can also extend knowledge to administration and stakeholders so they can determine if it would be advantageous to students and teachers to put PD opportunities in place across all campuses at the U.S. university.

Finally, the fifth key finding was that diversity was present in all classrooms. Hwang (2015) conducted a study involving culturally diverse classes. He found that it was important to use DI methods because of the differences in cultural backgrounds (Hwang, 2015). In the following section, I describe these five key findings relative to the themes that emerged and discuss and interpret the ideas as they connect to related literature.

Interpretation of the Findings

Several studies using a variety of approaches have been conducted by researchers with regard to DI (Baecher & Connor, 2016; Holland & Piper, 2016; Shirvani, 2016; Thomas & Hilton, 2016; Widiputera et. al, 2017). Nonetheless, there has been a concern for an increase in research regarding the need for DI in higher education (Chao et al., 2017; Shaari et al., 2014). Researchers indicated that lectures do not promote high levels of student engagement.

Findings in this study confirm that it would be advantageous for administrators to put PD opportunities in place to expand instructor's knowledge of DI methods based on instructor responses. In support of this, Fountain (2014), Parsons et al. (2013), and Kane et al. (2013) found a notable increase in learning outcomes when DI was implemented in the classroom. Furthermore, a cross-examination study regarding learning styles, teaching strategies, and academic achievement revealed that differentiation in the college classroom may increase teacher effectiveness and student achievement (Chien, 2014; Ellis, 2015; Mete & Bakir, 2016). However, results also indicated that lack of experience with DI methods by instructors may have led them to desire traditional teaching methods including lectures, quizzes, and tests versus DI methods. Likewise, findings of this study indicated that, for some instructors, traditional teaching methods were desired as opposed to differentiated methods because of lack of knowledge of what and how to implement DI (see also Gulatieri & Chapman, 2010). For example, participant 4 stated "I don't know what methods to use in my classroom, and when because I don't know enough about the different methods." Based on work by Chien (2014), Ellis (2015), and Mete and Bakir (2016), and purported by Tomlinson (2015), it is paramount that educators are willing to learn a DI method just as students are willing to learn content in order to meet the needs of all learners regarding learning outcomes and to positively impact student engagement and learning experiences.

The key concepts of the five themes of this study will now be discussed: (a) implementation of DI, (b) professional development opportunities, (c) positive and negative attitudes, (d) perceptions of DI, and (e) diversity was present in all classrooms.

For each concept, I consider how the findings support, do not support or extend knowledge to the literature and the conceptual framework.

Implementation of DI varied

Results of this study indicated that most instructors were willing to implement DI methods into their classrooms. In addition, some instructors did use DI through guest speakers and class discussions. However, some instructors relied on traditional teaching methods such as lectures, quizzes, and tests. These findings were supported in the literature. For example, Brown (2017) found that there was lack of student engagement when solely relying on traditional teaching methods, more specifically, lectures. In addition, Damrongpanit (2014) conducted a study involving mathematics students and mathematics teachers. He found that 69% of instructors were using a facilitator teaching style including lectures and tests. However, the findings revealed that the majority of students had a reflector learning style (Damrongpanit, 2014). Appositionally, Tomlinson (2015) suggested that educators must be willing to change teaching methods for the benefit of each learner. The findings of this study did not indicate that all teachers are changing their methods, but most indicated they think their traditional methods are best for their subject. Counter to this, Brookfield (2015) concluded that it was in the students' best interest for instructors to explore learning styles in order to accommodate students.

Professional Development Opportunities Desired

All instructors reported they knew what DI was, but wanted PD opportunities to learn more about the variety of methods with the exception of the math instructors who believed that traditional teaching methods were the best way to deliver content to their

students. The math instructors also reported that class discussions was how they implemented DI in their classrooms. Some instructors did not know what DI methods to implement into their classrooms because there are so many to choose from. Other instructors wrote it would benefit them to learn more about each method to determine which methods would be the best fit for their class. Gensheimer and Diebold (2014) found that students had increased test scores in an undergraduate psychology course when instructors used an inverted grading system as the result of using DI methods in their classrooms. Traditionally, a bell curve grading system is used. However, some instructors are now using a bimodal curve grading system instead of using A, B, C, D, or F. This has shown increased academic achievement for students.

The majority of instructors in this study said they would attend PD opportunities to develop their knowledge on specific DI methods. Some instructors reported they did not know how to implement DI into their classrooms because of lack of knowledge. Bradford et al. (2016) and Allen et al. (2016) found that when instructors in a criminal justice course implemented team-based learning and incentive-based learning, good examples of DI, that students were significantly engaged in course work versus using traditional methods. PD opportunities could extend knowledge to instructors, and administration, which could have a positive impact on both instructors and students. These findings are also supported in the literature. Previous studies have shown that increased academic success is among one of the many reasons for the implementation of DI methods (Allen et al., 2016; Hodges, 2015) in colleges today.

Positive and Negative Attitudes Towards DI

Instructors had both positive and negative attitudes regarding DI. One instructor indicated that her or his teaching methods had nothing to do with how well students did or did not do in their class. This instructor believed that if the student was not excelling in class, then this was as a result of lack of effort on the student's part. This instructor also indicated that she or he was not interested in implementing DI and that class discussions were a way that DI was implemented into the classroom. Lectures, quizzes and tests were the primary teaching methods used with the exception of class discussions. In contrast to this instructor's ideas, Chien, (2014) conducted a study on instructors' attitudes towards learning DI methods. Findings indicated that students were enthusiastic about being given a variety of ways to learn.

Other instructors demonstrated enthusiasm about DI methods and believed it was important to change teaching methods to meet the needs of each individual student. The majority of instructors were willing to learn more about DI and nine out of 11 instructors implemented DI in some fashion. Some of the participants reported using videos and group projects. These findings are supported in the literature. Mete and Bakir (2016) found that science teachers demonstrated positive attitudes about using service-learning group-based projects. In addition, Güzer and Caner (2014) suggested that educators must be responsive to learning styles so they can serve the needs of all students. This study will extend knowledge to administration and stake holders regarding instructor's experiences, perceptions, and attitudes at a U.S. university. Administration may want to conduct additional research to find out if the emerging themes in this study can be

generalized to a larger population across the remainder of the campuses. Administration may want to implement PD to educate instructors on DI. PD opportunities could have a positive effect on supporting instructors in their classrooms as well as meeting the needs of all learners.

Perceptions of DI

The findings indicated that instructors had different perceptions of what DI was in accordance with their current teaching styles. All instructors believed that class discussion was a DI method that was beneficial to students. All instructors held class discussions on a consistent basis. Some instructors believed that the use of power points and YouTube videos was an effective use of DI. Other instructors believed that they lacked knowledge of many specific methods of DI. Some instructors were confused because of the variation and number of DI methods. Instructors also expressed confusion in determining which DI methods to practice and which ones not to. These findings are supported in the literature relative to perception of DI. For example, Tomlinson and Imbeau (2010) suggested that perceptions will vary based on individual experiences with DI. Tomlinson (2015) suggested the importance of educating faculty and school administration on the DI methods so that informed decisions can be made to meet the needs of all learners. Furthermore, Awada and Gutiérrez-Colón, (2019) conducted a study that focused on 18 teacher's perceptions regarding cooperative learning. Findings revealed that by implementing cooperative learning approaches in their classrooms, teacher perceptions were enhanced.

A common theme across clusters and types of instructors was knowing what DI

was, but not using it because of lack of knowledge of what the different methods entailed. Furthermore, administrators may have to form realistic expectations of educators regarding time management and methods of DI because implementing DI methods may take time in terms of developing lesson plans, and other learning opportunities to meet the needs of all students (Mora-Whitehurst, 2013; Tomlinson, 2015). Since perceptions will vary based on individual experiences, it could prove effective to have instructors give a variety of learning opportunities so that students can learn content (see Tomlinson, 2015). The reason this study was conducted was because of a reported lack of DI at a U.S. university on a fall end of term student survey. The survey results indicated that students want DI methods to be available to them within their classes. Furthermore, offering DI methods may aid in increased academic achievement based on a variety of student perceptions as confirmed by Tomlinson and Imbeau (2010).

Exploring learner's and teacher's perceptions of classroom environments based on teaching methods and learning styles may contribute to a deeper understanding of the need for differentiation (Wright, 2014) among higher education students. The perceptions of students in recent studies have identified that students were more successful when given a variety of options to learn the subject matter. Chang et al. (2017) explored student self-awareness. The findings disclosed that students experienced increased self-awareness when given learning opportunities that involved team collaboration among their peers (Chang et al., 2017).

The conclusion of the study I conducted suggests that PD opportunities would assist college instructors so that they can effectively practice DI strategies. As all

participants reported having diverse learners in their classrooms, a study conducted involving English language learners' perceptions of classroom environments is useful information. Findings were that instructors need to make teaching methods a priority because of negative learning experiences and perceptions of classroom environments by students (Peng, 2016; Shay, 2013; Shay & Peseta, 2016). Tomlinson (2003; 2015) also suggested that there is an increased need for DI methods to be present in the classroom as the student population continues to become progressively diverse. Tomlinson's (2003; 2015) theory has proven effective by increasing academic achievement for students of all ages and educational levels (Tomlinson & Imbeau, 2010).

There are several philosophical approaches to teaching and learning including student-centered and active learning. Constructivism has become a vehicle to navigate what strategies to implement to enhance the learning experience. Though some colleges have begun to use various methods of differentiation, there is still a gap in practice with the large number of universities and colleges that primarily depend on traditional instructional methods. As a result, it is of omni-importance to equip educators with PD opportunities so that they have the proper tools to meet the needs of the growing population of diverse learners (Singhal, 2017).

Diversity was Present in all Classrooms

All instructors reported to have diversity present in their classrooms. Instructors were vague when answering this question, but all did state diversity was present in their classrooms. For example, participant 1 stated "I have always had students of various cultural backgrounds in my classes". Participant 5 stated; "Yes, there is diversity in my

classroom,”. Participant 7 stated; “I have ESL learners almost every term;” DI for English language learners is important because different cultures may need a variety of methods based on their backgrounds (Baecher et al., 2012). Students of all different backgrounds including culture, socioeconomic background and educational backgrounds may have a positive learning experience as the result of instructors implementing DI (Tomlinson et al., 2015). Beaudry (2015) conducted a study involving a class that had a diverse group of students. Findings revealed that implementing community-based learning experiences had a positive impact on both student and teachers. Students reported positive life experiences as well as educational experiences. Beaudry (2015) also found that community-based learning experiences positively supported teacher education among diverse groups of students.

Summary

In this section, the key concepts of the five themes of this study were discussed: (a) implementation of DI, (b) professional development opportunities, (c) positive and negative attitudes, (d) perceptions of DI, and (e) diversity was present in all classrooms. The concepts were supported through empirical research from the literature review that supported the key findings. The findings of this study confirmed that DI has been beneficial to students regarding learning outcomes, increased academic achievement, positive learning experiences, and increased student engagement in the learning process. Furthermore, the literature supported that instructor perceptions could be enhanced by offering PD opportunities to extend knowledge of DI methods. In addition, the literature confirmed that DI methods supported teacher education for diversity among students.

Findings of this study also revealed that instructors had both positive and negative attitudes regarding DI. Nine out of 11 instructors demonstrated positive attitudes on learning more about the variety of DI methods through professional development opportunities. The remaining two instructors believed that traditional delivery of instruction was desired and that class discussions served as a method of DI. The following section will include a discussion of limitations of this study.

Limitations of the Study

Limitations of this study included the limited geographical location of campuses chosen for selected participants. Therefore, participants were limited to experiences at one state exclusively. In addition, a limitation to the trustworthiness was that the questionnaire did not allow for me to ask participants to elaborate on their answers. This could have been accomplished by conducting interviews. Furthermore, a limitation to trustworthiness was considering that the data may not have fit into standard categories, and that themes may have not emerged. The last limitation to trustworthiness was sample size. The findings may be difficult to provide a contextualized assimilation with other campuses as a result. The objective was for the open-ended questionnaire to assist in eliminating bias. There were 11 participants that all had experience teaching on the U.S. university campuses in one state. This could have been a limitation, in that the U.S. university has 33 other campuses outside of the state in which the study took place. Therefore, the experiences, attitudes and perceptions of other instructors outside of the state that the study took place in cannot be known.

Recommendations

While the findings supported the desire for PD, opportunities to be made available to equip teachers with necessary tools and strategies to practice differentiation, the sample was limited to instructors exclusively at one U.S. university. The recommendations for further research include that a survey or questionnaire be developed and disbursed to instructors at this U.S. university at all campuses nationwide to ascertain if the findings of this study can be generalized to a larger population to see if similar themes emerge.

Based on the strengths of this study, further research needs to be conducted to determine how many professors want PD in DI to determine if it would make sense to implement PD opportunities across all campuses. PD opportunities could result in enhanced perceptions of DI among instructors. Furthermore, PD could lead to increased learning outcomes for students as well as lending support to teachers within their classroom to meet the needs of each learner.

Based on the weaknesses of this study, such as lack of knowledge of DI methods and a desire to practice traditional teaching methods, additional research should be conducted to determine if mathematics teachers at other campuses also desire traditional teaching methods including lectures, tests and quizzes. This could give insight to administration on mathematics instructors' perceptions and attitudes regarding DI. Furthermore, results may persuade administrators to put PD opportunities in place nationwide so that instructors at this U.S. University may be able to better meet the needs

of all students. It is recommended that administration carry out an interview study so that richer responses may be able to be collected.

The literature reviewed in chapter two outlined several studies regarding DI along with the various DI methods and what those methods entailed. According to Tomlinson (2015), there is an increased need for DI as the student population in all educational arenas has become progressively diverse. Students vary in socioeconomic status, motivation, cultural backgrounds, language, abilities, and disabilities (Tomlinson & Imbeau, 2010). As a result, the demand for DI methods is rising. The theoretical framework focused on Tomlinson's (2003; 2015) theory that suggests DI methods should be present in the classroom is evidentiary of academic achievement and has proven effective in having a positive impact on students of all ages and academic levels (Tomlinson, 2015). Prior theories including multiple intelligence theories as well as student readiness theories (Armstrong, 2014) reflect relevance in that the purpose of this study was to explore whether instructors believed they had the necessary tools and strategies to practice differentiation.

Whereas differentiation has a wide array of subtopics, meanings, and models, it mirrors the notion that students learn in different ways (Fountain, 2014). Implications of this study will be presented in the following section.

Implications

The findings from this qualitative study demonstrated that nine out of 11 instructors at a U.S. university desire extended knowledge of the wide array of DI methods available. While teachers believed they knew what DI was, there was confusion

with reference to which methods to implement and also a desire to learn more about different DI methods. The potential impact for social change regarding DI is that the findings and information in this study will lend knowledge to stakeholders and administration at a U.S. university so they can decide how offering PD opportunities to instructors may increase their knowledge and skill levels concerning DI. The implications in this study is that instructors do not really use DI, and some instructors want PD opportunities to learn about DI. Furthermore, expanding instructor knowledge of DI may lead to social change by empowering instructors to implement DI so they can meet the needs of all learners. As a result, students may experience increased academic success, increased student engagement, and positive life and educational experiences. Empirical implications of this study suggest that DI could benefit students throughout their learning experience by providing a variety of ways for them to learn content. In addition, use of DI can address needs of various learners based on Gardner's theory (2011) that people learn in different ways and Tomlinson's (2015; 2003) theory that suggests DI provides a way to meet the needs of all learners. The final conclusion of the study will be presented next.

Conclusions

Lecturing is still the primary teaching method in large classes at the college level. As a result, some students have perfected traditional ways of learning relative to note-taking and study habits (Brookfield, 2015). However, more research needs to be conducted because there are unknown factors to consider with respect to differentiation in college classrooms. The implementation of DI into classrooms at the college level could

positively impact students from all walks of life with respect to their learning outcomes, experiences, and perceptions of life. This study explored the experiences, attitudes, and perceptions of 11 instructors at a U.S. university. Not enough is known about the use of DI in college classrooms or if the implementation of DI can assist in producing higher academic achievement for students versus traditional teaching methods. It is also unclear how DI should be implemented in large university courses. Finally, it is clear that professors are not using DI in college courses from this sample of participants. The limited strategies of guest speakers and YouTube convey a lack of knowledge of DI strategies. The desire for PD indicates a willingness to learn and a recognition that professors do not currently understand DI well enough to implement it.

As the student population continues to become progressively diverse, it is paramount that teachers are equipped with the necessary tools and strategies to practice DI. Future research of college instructor's knowledge of DI methods is critical to ensure the needs of all students can be met. The literature review provided extensive empirical evidence that DI could be an effective way to teach students. Furthermore, the research indicates that people learn in different ways. If people learn in different ways, then perhaps it is vital to the success of students that teachers learn to deliver instruction in different ways.

Effective leadership and student success continue to be challenges throughout colleges today. Findings of the current study add to the previously conducted body of research. If instructors feel confident in their ability to provide effective instruction by

differentiating to meet the needs of all students, then the potential for social change within colleges throughout the nation will increase significantly.

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Appendix A: Differentiated Instruction Case Study Questionnaire

This survey is intended to be used for the collection of data to determine the perceptions, experiences, and attitudes of instructors at a United States university concerning DI practices.

- 1.) What does differentiated instruction mean to you?
- 2.) How do you believe you practice differentiated instruction methods? Please explain:
- 3.) How do you think your teaching practices match the needs of students? Why or why not? Please explain.
- 4.) How do you use tiered lesson strategies in your classroom?
- 5.) How do you use collaborative learning strategies for academic achievement in your classroom? What are they?
- 6.) How do you use flipped classroom strategies in your classroom?
- 7.) Do you have diverse cultures in your classes, and do you use different strategies for different cultures in your classroom? What are they?
- 8.) How do you use learning style strategies in your classroom? What are they?
- 9.) How do you question students to trigger divergent modes of thinking? Please explain.
- 10.) What is your primary teaching method?
- 11.) How well do students learn in your classroom? How do you know?
- 12.) How many years have you been teaching college students?
- 13.) What subject areas do you currently teach?

Thank you for your participation in this study. Please look over your answers to ensure you feel they are an accurate representation of your perceptions, attitudes, and experiences regarding differentiated instruction. Please place an X below to indicate you have reviewed your answers and agree they are accurate. Thank you!

Sincerely,

Walden research student

Appendix B: List of Codes

Teaching practices
Needs of students
Tiered lesson strategies
Collaborative learning strategies
Flipped classroom strategies
Diversity
Cultures
Learning style
Teaching style
Divergent modes of thinking
Primary teaching method
Academic achievement
Test
Quizzes
Note taking
Guest speaker
Visual learning
Auditory learning
Years of experience
Subject areas taught
Attitudes
Perceptions
Experiences
Professional development
Class discussion

Active learning

Service-learning

Student engagement

Appendix C: Permission from Author To Use Survey

Brandy, you are welcome to cite my work, *Questionnaire Survey Research: What Works*. Please note that the copyright is held by the Association for Institutional Research, so you may need to contact them for permission to cite excerpts aside from the survey I developed.

Best wishes,

Linda

Linda Suskie

Assessment & Accreditation Consultant

Appendix D: Permission From Publisher To Use Linda Suskie's Survey

Hi Brandy,

Thank you for your inquiry. Please consider this email response as permission to cite the AIR publication referenced below.

Suskie, L. (1996). Questionnaire Survey Research. *Association for institutional research, resources for institutional research*, 6(2), p.155.

Sincerely,

Elaine

Elaine Cappellino

Associate Director of Member Engagement

Association for Institutional Research

ecappellino@airweb.org | (850) 391-6661

Appendix E: Walden IRB Approval Letter

Dear Ms. Waldron,

This email is to notify you that the Institutional Review Board (IRB) has approved your application for the study entitled, "A Look at Differentiation Through The eyes of Instructors at a U.S. university"

Your approval # is 02-05-19-0515028. You will need to reference this number in your dissertation and in any future funding or publication submissions. Also attached to this e-mail is the IRB approved consent form. Please note, if this is already in an on-line format, you will need to update that consent document to include the IRB approval number and expiration date.

Your IRB approval expires on February 4th, 2020. One month before this expiration date, you will be sent a Continuing Review Form, which must be submitted if you wish to collect data beyond the approval expiration date.

Your IRB approval is contingent upon your adherence to the exact procedures described in the final version of the IRB application document that has been submitted as of this date. This includes maintaining your current status with the university. Your IRB approval is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, your IRB approval is suspended. Absolutely NO participant recruitment or data collection may occur while a student is not actively enrolled.

If you need to make any changes to your research staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 1 week of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB application, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the Documents & FAQs section of the Walden web site:

<http://academicguides.waldenu.edu/researchcenter/orec>

Researchers are expected to keep detailed records of their research activities (i.e., participant log sheets, completed consent forms, etc.) for the same period of time they

retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Both students and faculty are invited to provide feedback on this IRB experience at the link below:

http://www.surveymonkey.com/s.aspx?sm=qHBJzkJMUx43pZegKlmdiQ_3d_3d

Congratulations!

Bryn Saunders

Research Ethics Support Specialist

Office of Research Ethics and Compliance

Email: irb@mail.waldenu.edu

Phone: (612-)312-1336

Fax: (626-)605-0472

Walden University

100 Washington Ave. S, Suite 900

Minneapolis, MN 55401

Information about the Walden University Institutional Review Board, including instructions for application, may be found at this link:

<http://academicguides.waldenu.edu/researchcenter/orec>